

CANADA
DEPARTMENT OF MINES AND RESOURCES

MINES AND GEOLOGY BRANCH

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BIOLOGICAL SERIES No. 28

**MAMMAL INVESTIGATIONS ON THE
CANOL ROAD, YUKON AND
NORTHWEST TERRITORIES, 1944**

BY

A. L. Rand



OTTAWA
EDMOND CLOUTIER
PRINTER TO THE KING'S MOST EXCELLENT MAJESTY
1945

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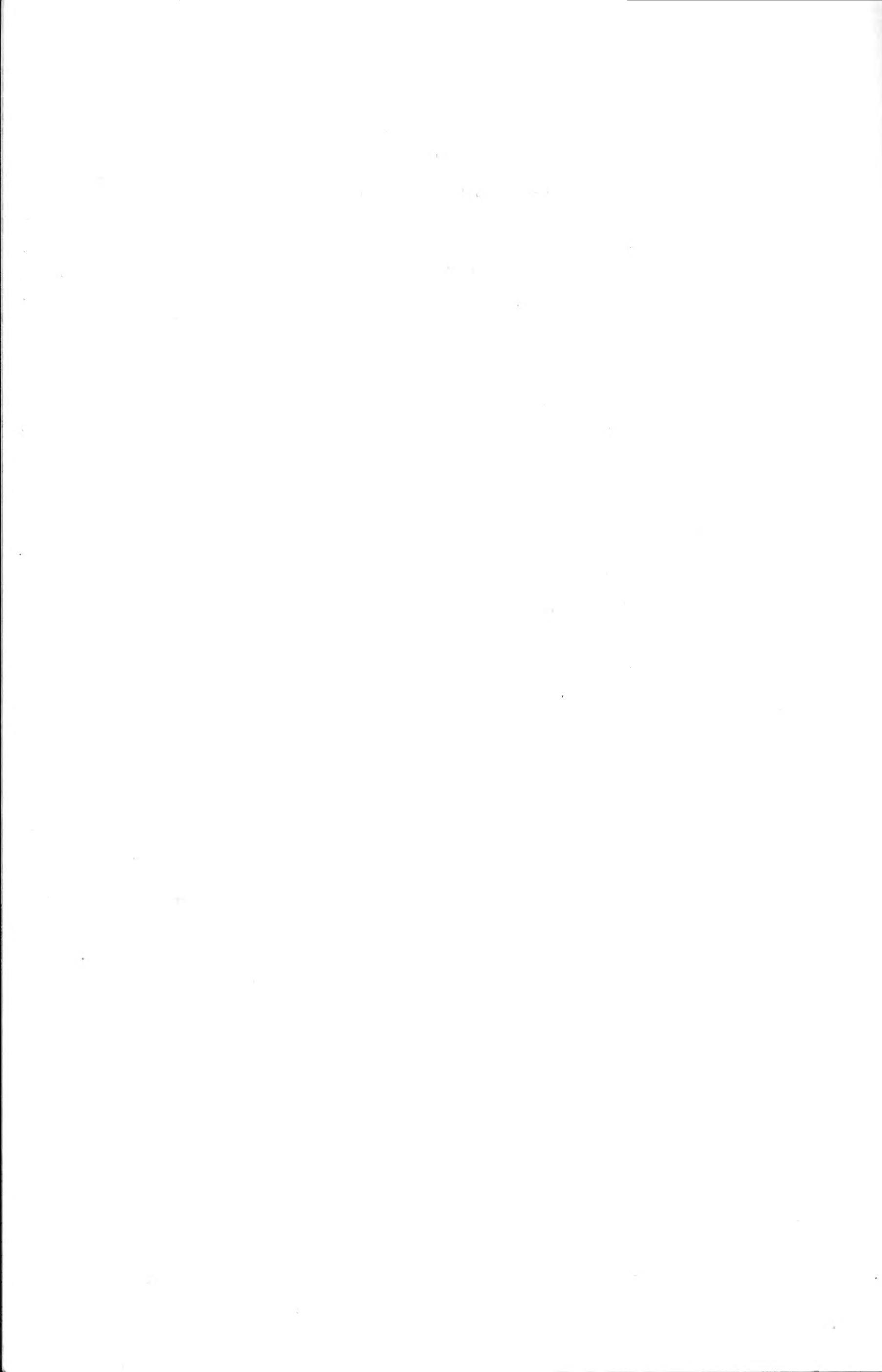
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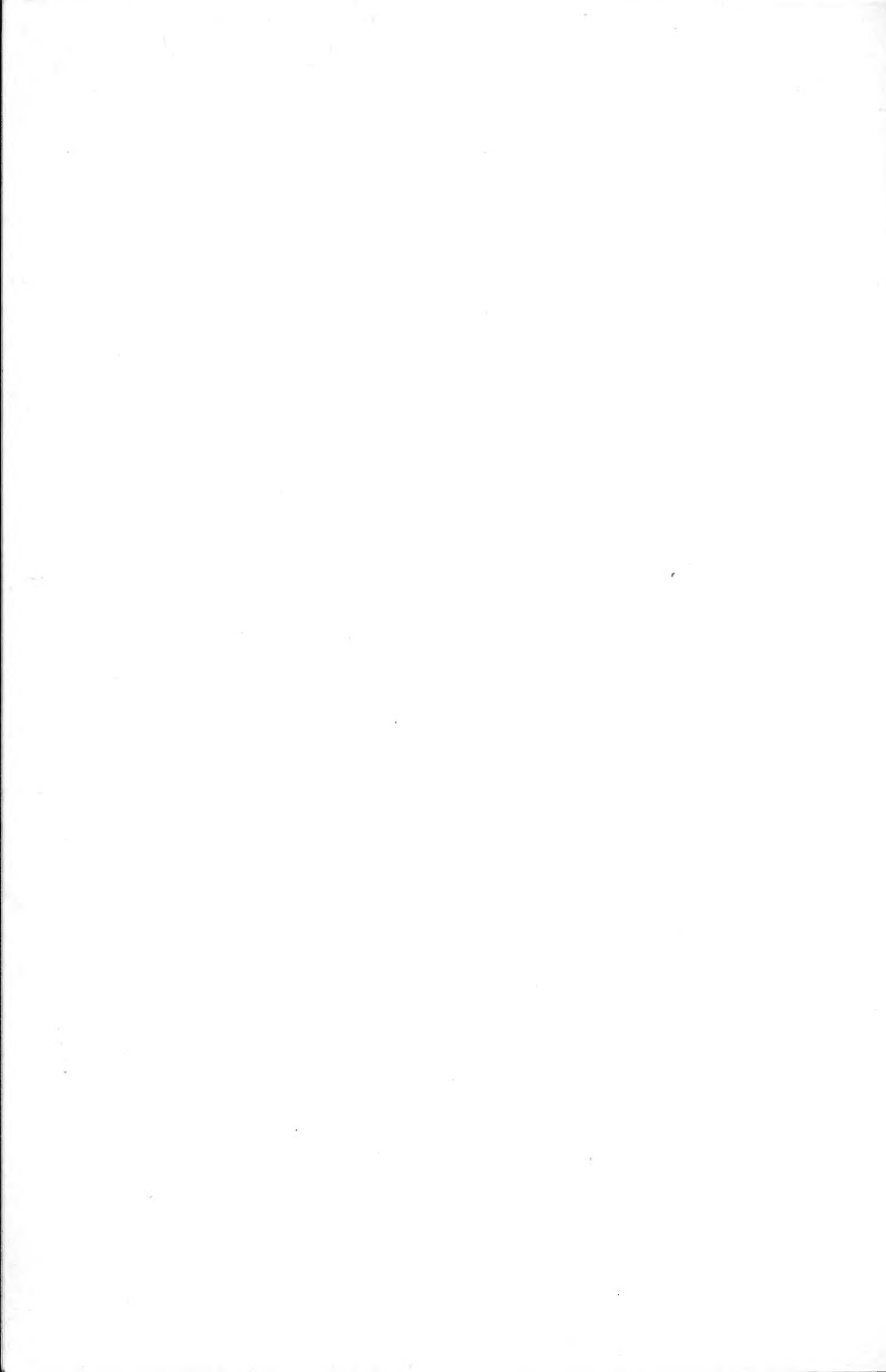


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MAMMAL INVESTIGATIONS ON THE CANOL ROAD, YUKON AND NORTHWEST TERRITORIES, 1944

INTRODUCTION

Mackenzie Mountains have been one of the least known and most inaccessible areas in Canada. With the completion of the Canol Road, from Teslin Lake, Yukon, to Mackenzie River, Northwest Territories, in 1944, travel across this area became comparatively easy¹ (See Figure 1).

In the summer of 1944 a field party from the National Museum of Canada, composed of A. E. Porsild, botanist, A. L. Rand, zoologist, August Breitung, botanical assistant, W. H. Bryenton, zoological assistant, and A. Stoltz, cook, made studies on the flora and fauna along the Canol Road from Teslin Lake to Macmillan Pass, Yukon, with a brief reconnaissance trip through the Northwest Territories from Macmillan Pass to Mackenzie River.

Travel was by motor truck; equipment was brought from Ottawa; supplies were purchased in Whitehorse; and six main camps were established from which most of the work was done, with use of the truck to reach other localities.

The present paper is a résumé of the mammal work on the Yukon section of the Canol Road, with a few notes on the mammals of the Northwest Territories section.

ACKNOWLEDGMENTS

A great many people assisted in organizing and carrying on the field work, and others gave information and specimens that have added greatly to the value of the report.

In Edmonton Major General W. W. Foster, Special Commissioner for Defence Projects in Northwest Canada, facilitated arrangements for proceeding on the Canol Road, and Mr. L. E. Drummond, Secretary-Manager, Alberta and Northwest Chamber of Mines and Resources, helped in various ways.

In Whitehorse Mr. Lawrence Higgins, Mining Recorder, acted as our forwarding agent. He provided storage space, and also data on wild life from his files. Mr. C. K. Le Capelain, Liaison Officer, Department of Mines and Resources, through his innumerable contacts and courtesies greatly lessened the troubles of the party in Whitehorse.

The United States Army, through Major W. S. Dunlap, Corps of Engineers, Chief, Operations Division, gave the party free access to the Canol Road, and a letter of introduction that helped make the path easy.

The E. W. Elliott Construction Company, Whitehorse, granted many privileges, and thanks are due them and a host of their employees.

Mr. Drury, of Taylor and Drury, Whitehorse, who has traded in the Pelly-Ross area for many years, gave much valuable information on the mammals of the area, as did his Post Managers, Mr. F. Edsel of Ross Post, and Mr. F. McLennan of Sheldon Lake.

Mr. O. V. Figge of Davenport, Iowa, hunted big game in the area south of Lapie Pass for 3 weeks about the first of September, and gave details of game seen.

¹ For general information on Yukon See "The Yukon Territory", and for Mackenzie District See "The Northwest Territories". Both are issued by the Bureau of Northwest Territories and Yukon Affairs, Lands, Parks and Forests Branch, Ottawa, 1943.

Cpl. A. Buzzalini, U.S. Army, and Mr. H. R. Hammond and Mr. U. J. Arsenault, of Consolidated Mining and Smelting Company, donated specimens to the collection.

Mr. W. H. Bryenton of The Pas, Manitoba, proved an able collector and an agreeable camp companion, who carried on most of the mammal trapping and preparation. His knowledge of mammals, gathered during many years' trapping and travelling in subarctic Canada, contributed greatly to the results of the work. Mr. A. E. Porsild, though with a wealth of botanical material to collect and record, still found time to make important contributions to the mammal work, as did Mr. A. Breitung. Mr. Porsild has also critically read the manuscript, and checked botanical identifications. Mr. A. Stoltz, also a trapper of many years' experience in northern Manitoba, aided in mammal collecting whenever other duties permitted.

R. M. Anderson, National Museum of Canada, helped in numerous ways in preparing this report, and in understanding mammal problems that have arisen.

To these, and to the many others who helped with the work, thanks are expressed.

GENERAL TOPOGRAPHY

The Canol Road follows river valleys through a mountainous country, crossing from river valley to valley through mountain passes and over high ridges.

The altitude at Johnson Crossing is about 2,200 feet; that at Mackenzie River is about 350 feet. A few miles east of Johnson Crossing the road rises to 4,000 feet and quickly drops back to 2,500 feet; in the Lapie Rose Pass it rises to 3,800 feet, east of Macmillan Pass to about 5,500 feet, and on the Plains of Abraham to 5,800 feet.

Many of the valleys are narrow, lined with series of steep mountain peaks rising above timberline. The Nisutlin, Pelly, and most of the Ross and Macmillan flow in broad, comparatively smooth valleys, and the Mackenzie is bordered on the west by 20 miles or so of flat country.

SUMMARY OF TYPES OF VEGETATION¹

The lower altitudes are largely forested; the higher altitudes are covered with dwarf birch, or alpine tundra, with much bare rock and scree at the highest altitudes.

The forests are largely coniferous, spruce, pine, and fir east of Macmillan Pass, with much aspen and some white birch; along the streams are poplars. The forests reach their best development along Nisutlin River; along the south slopes bordering Quiet Lake; and in the lower, well-drained slopes bordering the flats of Ross River Valley. Forest of a muskeg type is common. In Pelly Valley apparently the forest has been destroyed by fire long ago, and has been replaced by second growth willow and aspen, or by a scanty herbaceous cover.

Just east of Johnson Crossing and in Lapie Pass and in Macmillan Pass, the road crosses over dwarf birch flats. There, and in the upper Rose and upper Lapie Rivers, and on Mount Sheldon, alpine tundra is readily accessible from the road by a climb varying from $\frac{1}{4}$ hour to 3 hours.

East of Macmillan Pass the forests are also mostly coniferous; spruce, with aspen, birch, and larch. They are best developed along the Mackenzie, in the valley of the Twitya and Godlin, and practically end where the road leaves the main valley of the Sekwi to travel westward to Macmillan Pass.

Dwarf birch and alpine tundra occupy practically all the country from Macmillan Pass to the main valley of the Sekwi; the slopes above Sekwi River; the highest slopes above the Godlin and Twitya; and the country from the head

¹ A. E. Porsild is preparing for publication a detailed account of the vegetation of this area.

of Trout Creek to the Little Keele. The higher slopes above the Little Keele are also alpine in vegetation. Rock exposures and talus slopes are very conspicuous in this area, and in and about Dodo Creek.

SUMMARY OF THE MAMMAL FAUNA

The list of mammals here recorded from the Canol road is forty-one. Of these our party secured specimens of thirty-six; the occurrence of two others is demonstrated by earlier specimens in the National Museum (least weasel and brown lemming); three others are included on the basis of local reports by the inhabitants (marten, wolverine, and otter). Notes on one species that has not been recorded for the Canol Road are also included; and one new species is described.

Many of the mammals that occur, such as the cinereus shrew, water shrew, pigmy shrew, black bear, marten, mink, wolverine, lynx, woodchuck, red squirrel, flying squirrel, beaver, wood mouse, northern bog lemming, meadow vole, muskrat, porcupine, snowshoe rabbit, and moose range widely across Canada in the coniferous forest.

Another group of species is western in distribution, such as the dusky shrew, coyote, little chipmunk, wood rat, long-tailed vole, and Rocky Mountain jumping mouse. These species have a more or less widespread range in western North America, with the greater part of their range south of Yukon.

Other mammals that are largely northern-northwestern in distribution are: whistler, Parry ground squirrel, tundra vole, collared pika, northern mountain sheep, brown lemming, and Dawson red-backed mouse. Some of these are mountain animals throughout their range; others, the ground squirrel, tundra vole, and brown lemming, also inhabit the arctic tundra, and Dawson's red-backed vole is a boreal forest animal, ranging out onto the tundra.

The main habitat differences are indicated above, but a few details may be added.

Above timberline is the main home of the grizzly bear (specific status still to be worked out), whistler, brown lemming, tundra vole, collared pika, caribou (specific relationships yet to be worked out), and northern mountain sheep.

Other species, common above timberline, but commonly ranging downward into more open habitats along the streams, into clearings, and more open, drier forests are: Parry ground squirrel and little chipmunk.

Wooded country is the main habitat of the cinereus shrew, black bear, red squirrel, snowshoe rabbit, and a number of other species such as the dusky shrew, red fox, red-backed mouse, porcupine, and moose; the latter group commonly ranging to above timberline.

Two species, the flying squirrel of heavy spruce timber, and the wood mouse of the lower forested valleys, are apparently restricted in their distribution here on the periphery of their range.

Grassy openings and swamps in the forest seemed the favourite habitat of bog lemmings and meadow voles, and probably of Rocky Mountain jumping mouse.

The wood rat, of limited distribution, was found only on rock outcrops at low altitudes.

The mink, beaver, and muskrat were restricted to waterways and marshes.

The Canol Road runs through an area with a scanty population, composed almost entirely of Indians, who depend on the wild life resources of the country. There are no registered trap-lines in the Yukon. The Mackenzie section of the area traversed by the Canol Road is in the Mackenzie Mountain Game Preserve, and trapping in it is limited to Indians, Eskimos, and half-breeds living the life of natives, with the exception of such white trappers as were already operating in the area at the time it was set aside as a preserve.

FUR

The Indians depend on furs for a "cash crop", and on game animals for most of their food and some clothing. There are trading posts at Teslin Post, Ross Post, and Sheldon Lake.

Most of the information on the fur and game is for the Pelly-Macmillan-Ross River area.

In the early days it was good marten and lynx country. Osgood, writing in 1909 (No. Amer. Fauna, No. 30) says the Macmillan region in general was known as "good marten country". At least six men trapped there in the season of 1904-05, and he was told a good trapper may get as many as three hundred marten in a season. However, he was told that it was necessary to select new ground, each season. Of lynx he wrote that they were common where rabbits were common, and that lynx were frequently seen. Keele, writing in 1910 (A Reconnaissance Across the Mackenzie Mountains, etc., Geol. Surv., Canada) says that fur is the chief article of value derived from the Pelly River and its tributaries, and gives the following table of estimated yield of Pelly and Macmillan Rivers:

Year	Number of trappers	Kind of fur	Value
1901.....	15	Chiefly marten...	\$ 7,000
1902.....	40	Chiefly marten...	15,000
1903.....	70	Chiefly marten...	20,000
1904.....	50	Marten and lynx..	18,000
1905.....	30	Chiefly lynx.....	8,000

There were also a small number of beaver, wolverine, and fox taken each year, and included in the above estimate.

The Indians took nearly an equal amount of fur.

Mr. Drury of Whitehorse stated that about the first of the century marten were common, and two good trappers could get four to five hundred in a season, and an Indian could catch fifty to sixty in a few weeks.

At present it is very different. Mr. Drury says that the present day fur catch from the Ross River area would be about \$15,000 to \$20,000 in annual value, all of which goes to Indians, and each trapper might get about \$500 to \$600. The fur catch is a mixed one: some beaver, some muskrat, only a few marten, and quite a few foxes and mink; lynx are very scarce, and squirrels, though common, are considered beneath the dignity of a man to trap, being left to children and women; weasels receive little attention.

The decrease in marten has been very pronounced; Mr. Drury thinks that a whole season's marten take from the whole area would not equal that of a single trapper early in the century.

Lynx were very scarce, but there were reports of their increasing in numbers in 1944.

GAME

The big game animals, moose, caribou, and sheep, are important to the residents as a source of food. Mr. McLennan at Sheldon Post estimated a few years ago that Sheldon Lake Indians had killed three hundred moose in one season, for both human and dog food. On Lapie River one man of a party of three Indian families who were hunting meat in early September said that in 16 days they had killed ten moose and two sheep. The meat was being dried for future use. Mr. Drury thought this was an average hunt.

During the early summer many of the beaver hunters from Ross Post had not yet returned and Mr. Edsel said they were trying to get meat to bring to the post for summer food.

During the summer at Ross Post many Indians regularly hunted rabbits and set snares for them, and Mr. Edsel said that when common they were one of the main foods.

Caribou on upper Rose River are evidently important, judging by remains of them about old campsites. On Ross River many caribou used to come through in migration in winter and many were killed for food, but they are scarce in recent years, possibly due to a change in migration route.

The big game, moose, caribou, sheep, and grizzly bear, are very important as a sportsman's attraction. A single sportsman may bring more money into the country than does the winter's trapping of several Indians.

Moose and black bears occur in all the wooded country, up to above timberline; caribou are present the year round on many of the higher mountains, notably in the upper Rose River and Macmillan Pass areas; a saddle-back coloured Dall sheep is common in the Lapie-Rose River area. Grizzly bears are common in the higher country above timberline.

PREVIOUS WORK IN THE AREA

The only previous general mammal studies reported on from contiguous areas in Yukon are by Osgood, who in 1899 made a survey of Yukon River (1900, No. Amer. Fauna, No. 19), and in 1904 made a trip into Ogilvie Mountains and the Macmillan River area (1909, No. Amer. Fauna, No. 30). For the Mackenzie, Northwest Territories, Preble summarized the earlier biological work in 1908 (No. Amer. Fauna, No. 27) and Anderson has summarized our mammal knowledge in 1937 (in "Canada's Western Northland").

Sheldon, in 1905, made a trip up Ross River to what is now Mount Sheldon in search of sheep, and has given some data on the other mammals (1911, *The Wilderness of the Upper Yukon*).

Keele, in 1907-8, made a crossing of Mackenzie Mountains and gave a few scant data on the wildlife (1910, *A Reconnaissance Across the Mackenzie Mountains on the Pelly, Ross, and Gravel Rivers, Yukon and Northwest Territories*; Geol. Surv., Canada).

The National Museum has a large collection of mammals from Teslin Lake and vicinity made by Clement Lewis in 1912. Though the collection was never reported on as a whole, many of the species have been used by various authors in preparing monographs, and some of them are included here.

ITINERARY IN 1944

Mileages used are those marked on the Canol Road when the party traversed it. Unfortunately these only approximate those on the map, which are for the pipe-line, and the latter takes a less winding course than that of the Canol Road itself.

The mileages were marked from west to east from Johnson Crossing (Mile 0 at outlet of Teslin Lake) to just east of Macmillan Pass at the pump station on Moas Creek, one of the headwaters of Keele or Gravel River (Mile 307). East of this the mileages are calculated from Mackenzie River, Mile 0, westward to the pump station at Moas Creek, which was also Mile 214 E, as well as Mile 307 from Johnson Crossing. The mileages east of Macmillan Pass, starting at Mackenzie River, are distinguished by the letter E.

The following is a synopsis of the itinerary. The accompanying map (Figure 1) with mileages marked, shows locations.

- May 22, left Ottawa.
- May 30, arrived Dawson Creek.
- June 4, arrived Whitehorse.
- June 8, Whitehorse to Johnson Crossing and Quiet Lake, Mile 62 Canol Road.
- June 9, Quiet Lake, Mile 62, to Lapie Lake, Mile 105.
- June 10-11, Lapie Lake, with a trip to Mile 132.
- June 12-July 8, Lapie River camp, Mile 132, with a trip to Sheldon Lake, July 1.
- July 8-22, Rose River camp, Mile 95.
- July 22-31, Nisutlin River camp, Mile 40.
- July 31, Mile 40 to Mile 141.
- Aug. 1, Mile 141 to Mile 222, Sheldon Lake.
- Aug. 1-20, Sheldon Lake camp, Mile 222.
- Aug. 20, Mile 222 to Mile 249.
- Aug. 20-27, Macmillan River, South Fork, camp, Mile 249.
- Aug. 27-29, at Mile 268.
- Aug. 29-Sept. 5, Macmillan Pass camp, Mile 282.
- Sept. 5, Macmillan Pass, Mile 282, to Sekwi River, Mile 174 E.
- Sept. 6, to Balstead creek, Mile 111 E.
- Sept. 7, to Camp Canol, and Mackenzie River, Mile 0.
- Sept. 8, to Plains of Abraham, Mile 82 E.
- Sept. 9, to Sekwi River, Mile 174 E.
- Sept. 10, to Macmillan Pass camp, Mile 282.
- Sept. 11, to Ross River, Mile 177.
- Sept. 12, to Johnson Crossing, Mile 0.
- Sept. 13, to Whitehorse.
- Sept. 25, arrived Ottawa.

DESCRIPTION OF THE ROUTE AND LOCALITIES STUDIED

The descriptions start from the west, at Johnson Crossing, and proceed eastward. Thus the data are arranged in a geographic rather than chronological sequence.

Johnson Crossing to Nisutlin River Camp (Mile 0 to Mile 40)

Johnson Crossing is at the outlet of Teslin Lake. The road trends in a general northeast direction and starts at once to climb over burned-over ridges toward a gap between two peaks. Much of the country is covered with young pine.

About Mile 9 to 12 the road runs in the saddle between two peaks that in early June were snow covered. The saddle was a mile or two wide, boggy, mostly treeless, and with a cover of dwarf birch. A band of conifers separates it from the bare rock and tundra of the peaks on each side, perhaps 2,000 feet above.

Beyond Mile 12 the valley of the Nisutlin opens ahead and the road descends slowly along the mountain side, through mixed spruce, pine, aspen, and birch forest and out into the valley where stands of spruce, pine, young pine, and willow occur.

Nisutlin River Camp (Mile 40)

The camp at Mile 40 was only a few hundred yards from Nisutlin River.

Pine forests, spruce muskegs and willow flats, and some aspen occupied the valley flats away from the river. The river itself meandered through a wide flat 50 to 100 feet lower. The edges of this flat were steep, in places showing

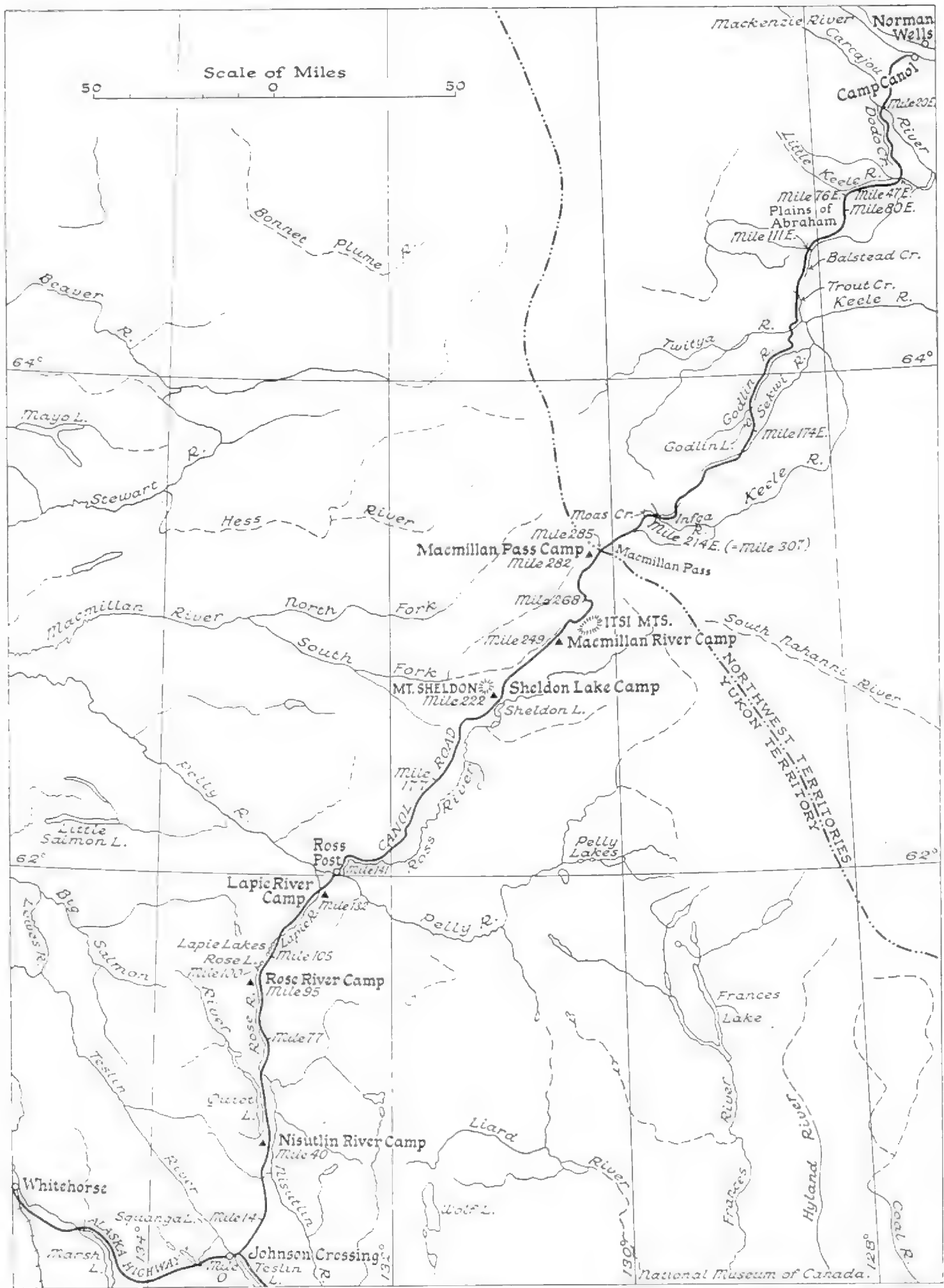


Figure 1. Map of Canol Road with mileages; and camps established by the 1944 National Museum of Canada field party.



Nisutlin River flows in a wide, wooded valley. Along its shores are stands of some of the finest spruce on the Canol Road, equalled only by those on Quiet Lake (Mile 40, July 1940).



Lagoon along Nisutlin River in which muskrats were found. The view is looking downstream toward Teslin Lake (Mile 38, July 1944).

fresh earth slips and cuts; in other places aspens and low vegetation were covering them. Along the river were stands of spruce with occasional trees up to 14 inches in diameter, and with those of Quiet Lake the best timber seen on the Canol Road; in other places were grassy and willow-covered swamps and lagoons; where the land was drier, pine grew.

Moose and black bear were recorded; red squirrels, wood mice, meadow mice, red-backed mice, and cinereus and dusky shrews were common in the forest; water shrews, the first Yukon records, were taken along a little forest stream; woodchucks and rabbits were fairly common in the grassy slopes near the river; chipmunks were fairly common in drier, more open habitats; and muskrats occurred in the marshy lagoons. Ground squirrels were apparently absent and beaver very scarce.

Nisutlin River Camp to Rose River Camp (Mile 40 to Mile 95)

Over similar country, past some little lakes, to Mile 48 the road comes out on Quiet Lake, and follows it to about Mile 63. The long, narrow lake is fringed on the west by a series of low domes and flat peaks that sweep up from near the lake shore to above timberline. The steep slope east of the lake is mostly covered with heavy forest of spruce and fir. The lake shore has little marsh.

About Miles 63 to 67 the road crosses from Quiet Lake to Rose River, through willow-covered ridges that should provide good moose browse. The lower part of Rose River Valley is largely covered with pine forest, with the mountains on each side rising to just above timberline. About Mile 90 the road enters a narrow valley between peaks that rise far above timberline; pine is replaced by the spruce and fir at the higher altitudes; this continues to the Mile 95 camp.

Rose River Camp (Mile 95)

Camp was on the shores of Rose River.

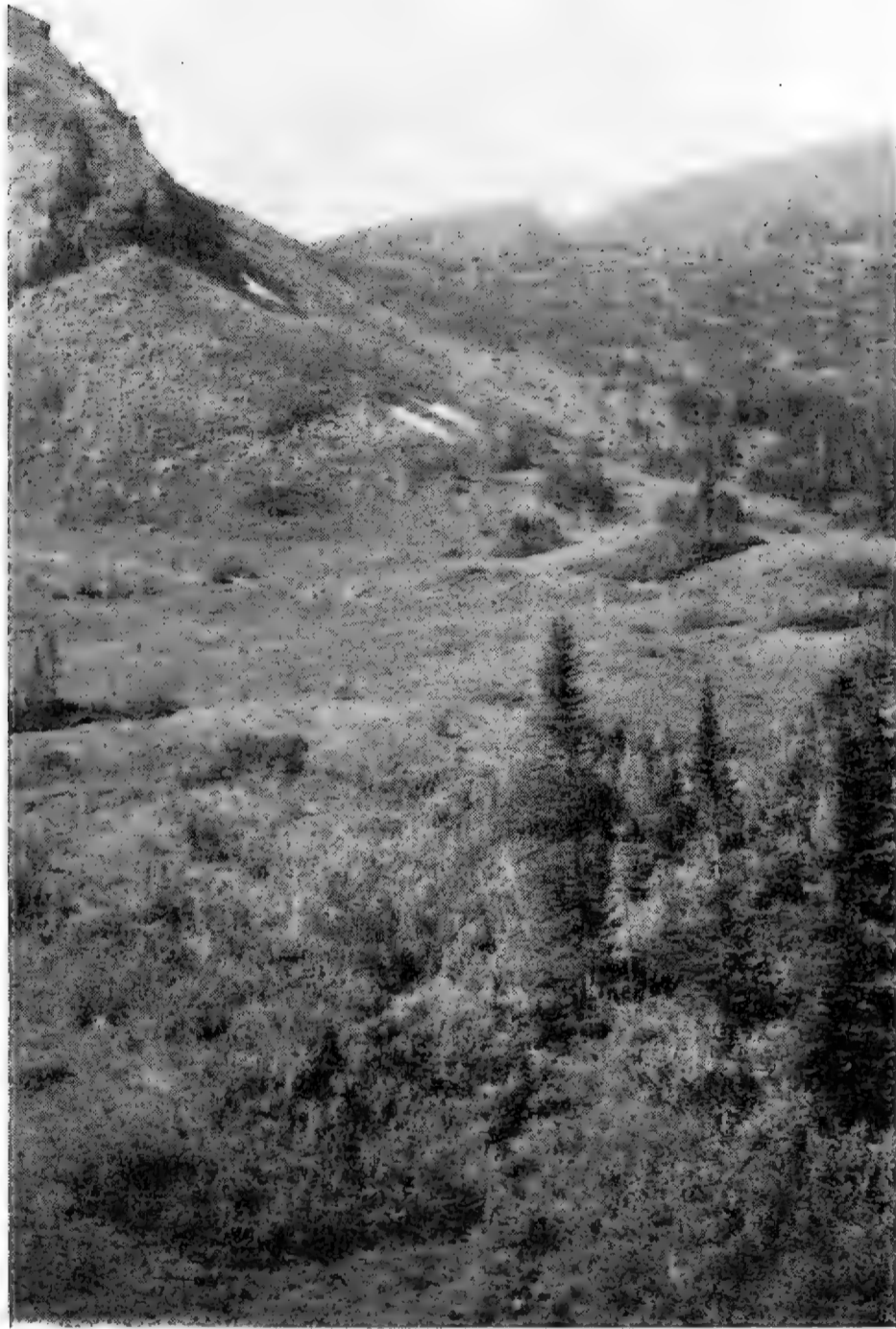
Open stands of spruce occurred along the stream, with many dwarf birch flats; the lower mountain slopes carried low forest of spruce and fir, with much caribou moss in places. Mountains rose far above the timberline on each side, with their peaks of bare rock. Exploration of the valley bottom showed moose and caribou tracks were common, and trapping secured dusky and cinereus shrews, jumping mice, meadow voles, and red-backed voles; dusky shrews and tundra voles were common at and just above timberline. Wolf tracks were common, and a nearby den of cross foxes was found. Once a grizzly bear wandered close by camp. Porcupines were very common, and four came into our camp one night. Above timberline we found pikas, whistlers, and caribou, but no sheep.

Rose-Lapie Pass (Mile 96 to Mile 112)

This saddle through the mountains widens somewhat. It has an irregularly hilly floor, with many scattered lakes of various sizes, in some of which were muskrats, and in one, at least, beaver. Much of the bottom of the pass was covered with dwarf birch. A narrow band of spruce and fir separated the treeless pass from the alpine tundra above. O. V. Figge, who hunted south of here this season, gave information on the game seen.

Lapie River (Mile 112 to Mile 132)

The pass narrows at about Mile 112, and the steep valley, there wooded with spruce, drops sharply. On the lower part of the valley, the north slope becomes barren, scantily covered with herbaceous vegetation, open stands of aspen, and some rock exposures.



At timberline above Rose River, Mile 95, tundra voles and dusky shrews were common; in the rocks were whistlers and pikas; ground squirrels were common; caribou and grizzly bears ranged over the whole country (July 1944).



View near Lapie River camp—the mountain top in the background, where sheep ranged, could be reached in 3 hours. Bog lemmings were found only in the little bog in the foreground; ground squirrels were common about the hoodoos, and the dry open bank to the left (Mile 132, June 1944).



Looking down Lapie River, from a hill above camp at Mile 132. The hills in the background are above the Pelly. The exposed slopes, with a scanty covering of herbaceous plants, were favourite haunts of ground squirrels.

Lapie River Camp (Mile 132)

This camp was situated just where the valley of the Lapie opened out into that of the Pelly. The top of the nearest mountain peak to the south could be reached in about 3 hours.

From there the alpine grassland to the south, the barren hillsides and rocky outcrops on the north slope, the spruce forests, muskegs, and aspen and poplar groves were trapped.

Sheep were common on the mountains; sometimes coming within a few hundred yards of the road. Wood rats were taken in rocky outcrops; red squirrels were common and chipmunks fairly so. In places rabbits were fairly common, and ground squirrels were very common. Pigmy shrews were taken here, and cinereus shrews, but no dusky shrews. Bog lemmings were found only in one small bog near camp.

PLATE VI



The treeless slopes, scantily covered with herbs and grass, north of the Lapie River camp, Mile 132, and a view up Lapie River. Sheep were common on these slopes, down to within a few hundred yards of the road; wood rats were taken in rocky crevices here, and phenacomys voles were taken in the edge of the forest (June 1944).

Lapie River to Sheldon Lake (Mile 122 to Mile 222)

Much of the lower part of the valley of the Pelly was second growth willow and aspen with slopes of herbaceous vegetation. There were numerous little ponds and lakes. Mr. F. Edsel of Ross Post gave much information about the area; the Indians here also provided some, and a few skulls of fur bearers were retrieved from the roofs of Indian cabins. Going up Ross River, about Mile 160, the road climbed out of the valley of the Ross, with its regrowth, and crossed a spruce-covered, lake-dotted plateau to drop back into the valley of the Ross at about Mile 170, into an extensive spruce muskeg flat that gradually became more rolling as it approached Mount Sheldon.

PLATE VII



Pelly River, looking downstream from the crossing (Mile 141, June 1944).

PLATE VIII



The Pelly Valley at the junction of Ross Valley (from the left) near Ross Post. The aspen flats and the bare slopes are favoured ground squirrel habitats.

Sheldon Lake Camp (Mile 222)

From this camp the party hunted the lake; the sedge marshes, bogs, and lagoons about the head of the lake; the dwarf birch flats; the spruce forests about Ross River and on the lower slopes of Mount Sheldon; and visited the alpine tundra and bare rock above timberline on Mount Sheldon.

Among the common mammals were the cinereus and dusky shrews, black bears, mink, wolf, red squirrels, red-backed and meadow voles, and muskrats. A few pigmy shrews were found; occasional grizzly bear tracks were seen; marten, otter, and wolverine were said to occur; ground squirrels and whistlers were found above timberline and a few beaver signs were seen about the head of the lake; bog lemmings were not uncommon in marsh and bog; porcupines were scarce, and a few sheep and caribou signs were seen. No wood mice occur here. Mr. F. McLennan was visited at the post at the outlet of Sheldon Lake and gave considerable information about the country and its mammals.

PLATE IX



Looking across the open spruce forest and the dwarf birch flats of Macmillan River Valley near Mile 245 (September 1944).

Sheldon Lake Camp to Macmillan River, South Fork, Camp (Mile 222 to Mile 249)

The road passes through a low, wooded gap from the valley of the Ross to that of the Macmillan. A few grassy meadows are present. The mountains each side of the Macmillan rise to just above timberline, with most of the valley with open spruce forest and much muskeg.

Macmillan River, South Fork, Camp (Mile 249)

Grassy meadows, dwarf birch flats, with much "caribou moss", spruce forest, and willow swamps were trapped, and one all day trip was made by Bryenton and Breitung to above timberline on Itsi Mountains.

Only a hasty reconnaissance was made here. Many old caribou trails were seen and bog lemmings were fairly common; whistlers and pikas were found on Itsi Mountains.

Macmillan River Camp to Macmillan Pass Camp (Mile 249 to Mile 282)

The open valley of the Macmillan had much dwarf birch in open flats, and scattered spruces on the valley bottom, with the mountains wooded on their lower slopes, rising well above timberline. Itsi Mountains, rising some distance from the road, carry large glaciers.

About Mile 166 the valley closes in, with mountains near at hand on either side. From here on there are only scattered trees along the narrow valley bottom, and there is only a scant, low band of timber, before alpine tundra, scree, and bare rock are reached.

PLATE X



The glaciers on Itsi Mountains, seen from about Mile 266 on the Canol Road above Macmillan River (August 1944).

Macmillan Pass Camp (Mile 282)

This was about 3 miles west of the Yukon-Northwest Territories boundary (that is close to Mile 285), and very close to timberline. The season being late, and weather bad, with a heavy snowfall the night of September 1, only a short stay was made here.

In Yukon the valley bottom and the neighbouring mountain slopes were investigated.

In Northwest Territories a trap-line was run in bogs and dwarf birch flats about Mile 287.

Pikas were found here again, and tundra mice replaced meadow mice. There were no white-footed mice. Grizzly bear signs were very common.

A reconnaissance trip was made from here to Mackenzie River. Little actual work was done, but a brief summary of the country may be of value.

PLATE XI



Looking up upper Macmillan River from the mountain above Mile 268. Apparently few sheep occur in these hills; whistlers and pikas are common.

PLATE XII



Macmillan Pass camp of National Museum party, Mile 282, near timberline. Tundra voles replaced meadow voles here; pikas were common in the rocks; grizzly bear signs were abundant (September 3, 1944).

PLATE XIII



A beaver pond and house in Macmillan Pass, N.W.T., far above timberline. Tundra and red-backed voles and dusky shrews were taken about this beaver pond (Mile 287, August 30, 1944).

Macmillan Pass to Moas Creek (Mile 283 to Mile 307)

This section of the road is all above timber in a country of broad ridges. There is much dwarf birch and caribou moss, and a little alpine tundra. Mountains are several miles from the road. Much of this is good caribou range and many people reported seeing caribou; tundra mice signs were very common; beaver and muskrat occur, but not commonly; wolves and grizzly bears are common according to accounts of the roadmen.

PLATE XIV



Mountains bordering the rolling ridges just east of Macmillan Pass, N.W.T. No conifers present; dwarf birch and "caribou moss" are common. Caribou and grizzly bears were reported common (Mile 290, September 10, 1944).

Moas Creek to Sekwi River (Mile 214 E (= 307) to Mile 180 E)

This is all a treeless country of narrow valleys with bare, rather low mountain peaks rising close on each side of the road. It is said to be good sheep country, with many grizzly bears and some caribou.

Sekwi River (Mile 180 E to Mile 174 E)

Descending Sekwi River the mountains rise high and close. Spruces form a continuous open stand along the narrow valley bottom and soon encroach upon the lower mountain slopes. Continuous tundra or grassland occupies only a small part of the slopes, the upper parts being bare rock, and there is much scree. This, too, is good sheep country, the sheep occurring close to the road. Grizzly bears are common.

Godlin River (Mile 174 E to Mile 135 E)

The Godlin, being lower, has more spruce, willow, and poplar, but it is still a mountainous country, the narrow valley hemmed in with high peaks. This is probably fairly good moose country, with sheep at higher altitudes.

Twitya River (Mile 135 E to Mile 115 E)

The gap between the Godlin and the Twitya is covered with open spruce of muskeg type. Grizzly bears were said to be very common.

The Twitya itself is in a broader valley, hemmed in by tall peaks, and with large poplars and spruce along the stream.

Leaving the Twitya by way of Trout Creek timberline is approached near Mile 120 E, and soon one is passing through fields of stone, and over tundra, crossing to the headwaters of the Carcajou.

PLATE XV

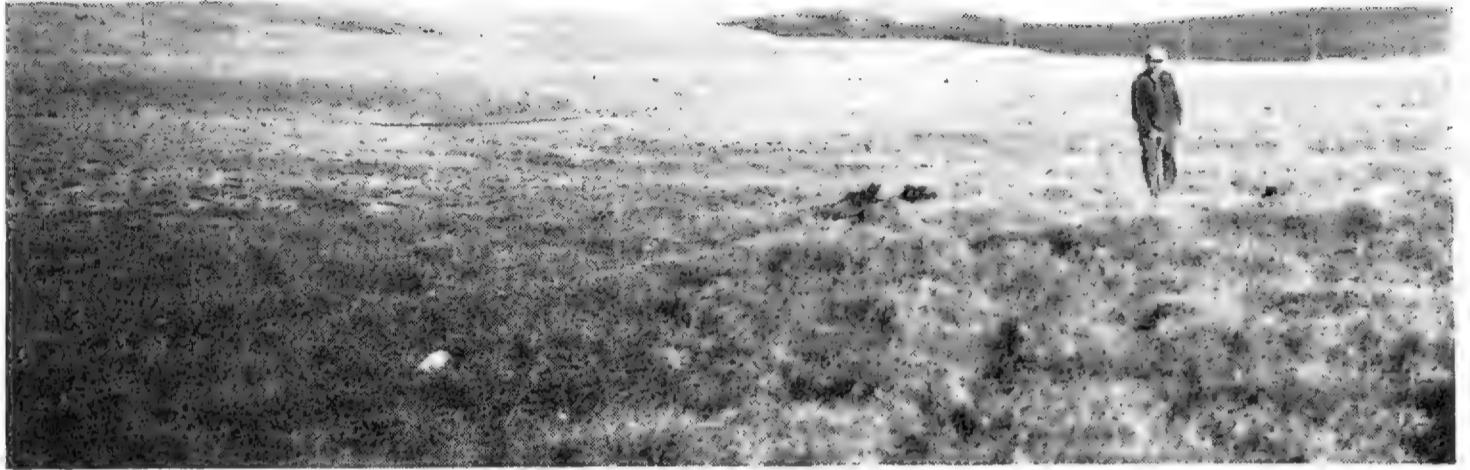


Headwaters of Carcajou River, near Balstead Creek, about Mile 100 E, N.W.T. (September 9, 1944).

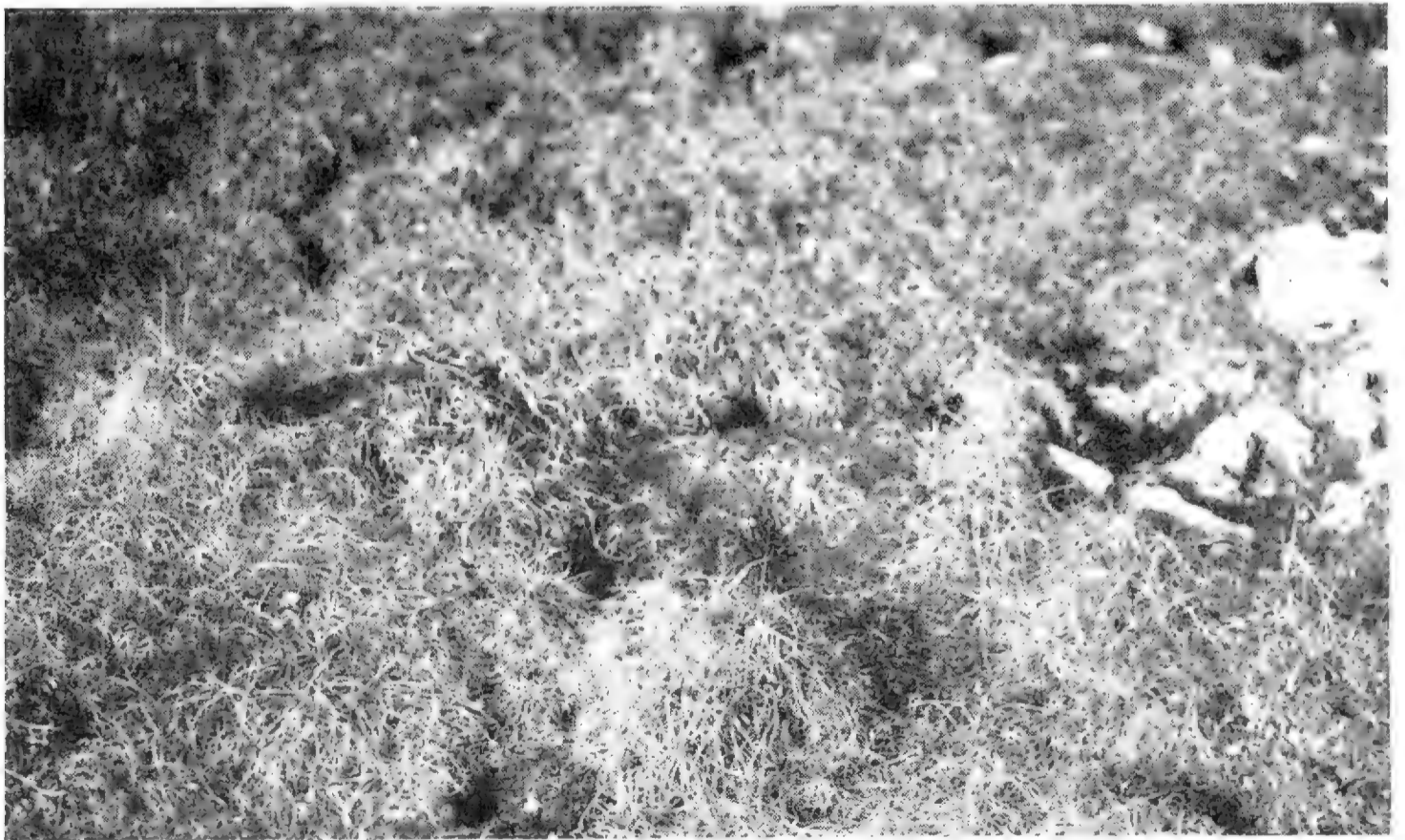
Balstead Creek to Plains of Abraham (Mile 115 E to Mile 82 E)

The road along the headwaters of the Carcajou is at and above timberline, with rocky peaks above Balstead Creek close at hand, where few sheep and many wolves are said to occur, and pikas were common in the rocks. A silver fox was seen here.

The Plains of Abraham (Mile 88 E to Mile 82 E) is a rounded ridge top far above timberline, where only about half the ground is covered with vegetation. Ground squirrels and a new species of vole were found here.



"Plains of Abraham": the high, treeless country that is the habitat of the new species of vole described on page 42 (Mile 82 E, September 9, 1944).



Entrance to the burrows of the new vole described on page 42. The earth about the entrances is from the underground chambers that are being made for winter food storage.

Little Keele River (Mile 82 E to Mile 46 E)

Descending into the valley of Little Keele River down a small rocky valley a thin fringe of spruce is soon encountered. The Little Keele flows in a wide, gravelly bed between high mountains that look like sheep country. The road soon climbs along the side, and passes through screes and alpine tundra, reaching its highest point about Mile 63 E, then descending again to the mixed spruce and aspen country. Above timberline ground squirrels and pikas were seen.

PLATE XVIII



Above timberline, looking across the valley of Little Keele River. Pikas and ground squirrels were common here (Mile 63 E, September 8, 1944).

Dodo Canyon (Mile 40 E to Mile 20 E)

Rocky walls and barren ridges characterized the canyon. Sheep are said to be very common here, and caribou, wolves, and rabbits are said to occur.

Dodo Canyon to Mackenzie River (Mile 20 E to Mile 0)

Leaving Dodo Canyon and crossing Carcajou River, the country is level muskeg spruce, with here and there aspen and birch

PLATE XIX



In Dodo Canyon. The barren-appearing hills are said to support large numbers of Dall sheep (September 7, 1944).

PLATE XX



The mountains west of the Mackenzie, as seen looking westward from the flat country (September 8, 1944).

ACCOUNTS OF SPECIES

Common Cinereus Shrew. *Sorex cinereus cinereus* Kerr

Fairly common to common at all the main camps.

The following take for 100 traps (all in Yukon) will give an idea of its abundance:

Nisutlin River: about 3 per 100 trap nights
 Rose River: about 8 per 100 trap nights
 Lapie River: about 5 per 100 trap nights
 Sheldon Lake: about 3 per 100 trap nights
 Macmillan River, South Fork: about 1 per 100 trap nights
 Macmillan Pass: about 4 per 100 trap nights

Though taken in a wide variety of habitats, in dense river bottom forests, muskegs, meadows, marshes, and dwarf birch flats, the cinereus shrew did not range as high in the mountains above Rose River as did the dusky shrew, and none was taken at or above timberline there, where the dusky shrew was common.

That the species is active by day as well as by night is shown by specimens caught during the day in traps.

Specimens saved, were taken (all in Yukon) as follows:

Nisutlin River: 4 female, 1 sex?
 Rose River: 1 male, 1 female, 2 sex? + 12 in formalin
 Lapie River: 3 male, 2 female, 3 sex?
 Sheldon River: 3 male + 2 in formalin
 Macmillan River, South Fork: 1 male
 Macmillan Pass: 1 sex? + 1 in formalin

Measurements are:

Male, total length (8) 93-102 mm. (av. 96.5)
 tail (8) 37-42 (av. 39.4)
 hind foot (8) 11-12.5 (av. 11.9)
 Female, total length (7) 87-101 (av. 93.7)
 tail (7) 36-41 (av. 38.1)
 hind foot (7) 11.5-13 (av. 12.3)

Additional Yukon material in the National Museum includes 4 males, 1 female, Dezadeash Lake, August 5-12, 1944 (Clarke).

Dusky Shrew. *Sorex obscurus obscurus* Merriam

This was a common shrew in some localities on the Canol Road, and was absent from other parts. At Nisutlin River camp (Mile 40) the catch was about 3 per 100 trap nights; on Rose River (Mile 95) about 9 per 100 trap nights; none found at the Lapie River camp (Mile 132); at Sheldon Lake about 3 per 100 trap nights; on Macmillan River (Mile 249) about 2 per 100 trap nights; and at Macmillan Pass (Mile 282) about 9 per 100 trap nights. In the last area it was taken in both Yukon and Northwest Territories.

It was taken in a wide variety of habitats: the dense forest of the river flats of Nisutlin River; muskegs; dwarf birch flats and meadows; under the edges of rocky scree at timberline; and far above timberline where small patches of turf cling amid bare rocks.

One female specimen taken July 29 at the Macmillan River camp contained six embryos with about a 5 mm. crown-rump measurement.

That these shrews are active both by day and by night is shown by specimens caught during the daytime.

Specimens saved, were taken as follows:

- Nisutlin River: 3 male, 3 female, 2 sex?
 Rose River: 5 male, 4 female, 2 sex?, 14 in formalin
 Sheldon Lake: 4 male, 3 female, 1 in formalin
 Macmillan River: 3 male, 2 female, 1 sex?
 Macmillan Pass: 2 male, 1 in formalin (latter in N.W.T., Mile 286)

Measurements are as follows (extremes and averages of 10, in millimetres):

- Males, total length 108-115 mm. (av. 110.5)
 tail 41-48 mm. (av. 44.2)
 hind foot 12-13.5 mm. (av. 12.9)
 Female, total length 110-124 mm. (av. 114.5)
 tail 42-50 mm. (av. 46.7)
 hind foot 13-14 mm. (av. 13.3)

In addition to the above Yukon material, the National Museum has three specimens from Clarke's 1944 collection: one from Haines Road and two from Dezadeash Lake. Jackson also recorded a Teslin Lake specimen in our collection (1928, No. Amer. Fauna, No. 51, p. 123).

These specimens, compared with those from southeast British Columbia and southwest Alberta, appear slightly greyer and somewhat more tricoloured, but the difference is slight.

Old individuals with heavy body, tail worn nearly hairless, and worn teeth, appear quite different in the flesh from younger animals with little worn teeth, comparatively slender body, and hairy tail.

Mountain Water Shrew. *Sorex palustris navigator* (Baird)

The water shrew was found only at one camp, on Nisutlin River (Mile 40), where three were taken. They were trapped along a little stream a few yards wide flowing through the forest. Two were taken during the night of July 24 in traps set a yard apart under the top of a felled spruce in a little muddy clearing 10 feet from the stream. The third specimen was taken during the daytime under an alder root on a little muddy bank about 3 inches from the water. This last had evidently come directly to the bait of cheese, bacon, and oatmeal. In its stomach, besides finely divided insect remains, was a white pasty material, apparently rolled oats from the bait.

Specimens:

- Nisutlin River: 1 male, 2 females

Measurements:

- Male, total length 148 mm.; tail 76 mm.; hind foot 19 mm.
 Female, total length 147, 147 mm.; tail 76, 72 mm.; hind foot 19, 20 mm.

In the small, flattened skull, the small external measurements, and the grizzled, whitish flecked pelage, these are plainly referable to *navigator*.

This record extends the known range of *navigator* northward from Bennett and Atlin, B.C. (Jackson, 1928, No. Amer. Fauna, 51, pp. 172-188, and Swarth, 1936, Jour. Mammal., 17, p. 400) into Yukon, from where the species has hitherto been unrecorded.

Northwest Pigmy Shrew. *Microsorex hoyi intervectus* Jackson

The pigmy shrew was rare; very much scarcer than the dusky and the cinereus shrew; and was found at only two localities. In Lapié Valley (Mile 132), where it opens out into Pelly Valley, they were found in the heavy grass in a poplar grove along a little stream, along with the cinereus shrew; at Sheldon Lake they were found in the mixed dwarf birch shrubbery and sedge swales near the head of the lake, where both the dusky and cinereus shrew were also taken.

Specimens were collected as follows:

Lapie River (Mile 132 W): 2 sex? (1 skull only), 1 female; June 21, 23, 25
 Sheldon Lake (Mile 222 W): 1 male, 2 female; Aug. 10, 15 (also one specimen in formalin, Aug. 7)

In addition, we have four specimens from Dezadeash Lake (C.H.D. Clarke, 1944); three specimens from just north of Irons Creek (Rand, 1943); and the Manitoba Museum has loaned us a specimen from Frances Lake (Feb., 1943, A. Norris-Elye).

Measurements:

Male, total length 84, 89.5, 92.5 mm.
 tail 27, 29, 30 mm.
 hind foot 11, 11, 11 mm.
 Female, total length (5) 83-90 mm. (av. 86.2)
 tail (5) 28-31 mm. (av. 29.3)
 hind foot (5) 10-11.5 mm. (av. 10.7)

Though Jackson (1928, No. Amer. Fauna, No. 51, p. 201) maps the range of this shrew as including southwest Yukon, he gives no data supporting this. His nearest specimens came from McDame Post, Dease River, B.C., and from Mackenzie River. In 1944 Rand (Nat. Mus., Canada, Bull. 98, p. 30) recorded the three Irons Creek specimens, without pointing out that the locality was just north of the British Columbia boundary in Yukon. The present records thus extend the known range of the species into south and eastern Yukon.

The present series compares well with specimens of *intervectus* from Ontario. Jackson (op. cit., pp. 208, 209) points out that *M. h. eximius* of interior Alaska shows a slight approach cranially toward *intervectus*, and specimens from western Yukon may be expected to show intergradation.

Black Bear. *Ursus americanus* subsp.

Black bears were common in all the wooded country of the Yukon part of the Canol Road, and came greedily to garbage dumps.

At Nisutlin River, Mile 24, we saw five about the garbage dump one afternoon, and about ten were said to feed there regularly. At Mile 40 bear signs were fairly common in the forest; on Rose River, at Mile 78 construction camp garbage dump, black bears were common visitors, three were reported shot there, and shortly afterwards Bryenton saw three others one night; no black bears nor their signs were seen in the Lapie-Rose Pass, Mile 90-105, near and above timberline, though there was a garbage dump at Mile 105 frequented by grizzly bears; on Lapie River black bears had been mistreated at the garbage dump where they were said to come commonly to feed; on Ross River, at Mile 177, eight black bears had been shot during the year; at Sheldon Lake bears were common, and nine different individuals were reported to frequent the garbage dump at Mile 222; at least six different individuals were seen in August; they were reported as common on upper Macmillan River, Kindle's party saw one at Mile 268, and Stoltz saw another. Beyond that, eastward, it was difficult to assess reports of bears, except that several frequented the garbage dump at the camp by Twitya River (Mile 133 E).

Black bears have been of little importance in the fur trade, due to their low value and their bulk. Mr. Drury told me that until recently he had been embarrassed with so many stored in his warehouse, but that on account of their being in demand recently as souvenirs he had sold them all.

Here, as elsewhere in the north, black bears make themselves obnoxious by destroying caches of food and entering camps, judging by the reports of Indians at Ross Post, who were in favour of a bounty on bears.

Black bears, under the influence of protection and food, became very tame at some camps, and at Mile 24 on Nisutlin River they came and tried to get

into the kitchen. The cook was sometimes startled to find a bear looking in the window at him in the morning, and the bull-cook after bringing in an armful of wood, turning to shut the door, found a bear had followed him in. At this camp the doors and windows had been studded with spikes, points out, to discourage the entry of bears. One big brownish bear was responsible for most of this, and at the cook's request it was shot. At Sheldon Lake the bears became very tame, and there were reports of bears coming into tents in which men were sleeping.

Though there was an abundant crop of berries in August and September, these bears continued to frequent the garbage dumps as well as feeding on the berries and herbs. The stomach contents of three taken near a garbage dump in August at Sheldon Lake were as follows:

- (1) Garbage, 50 per cent; blueberries and crowberries, 50 per cent
- (2) Garbage, 50 per cent; blueberries and crowberries, 50 per cent
- (3) Carrion (rabbit and maggots), 25 per cent; blueberries and red currants 50 per cent; green Equisetum, 25 per cent

Freshly skinned bear carcasses placed on the edge of the camp clearing at Sheldon Lake were eagerly eaten by black bears. Rand watched one bear feeding on such a carcass. The greedy, almost ravenous, manner in which it lay down on its belly and gobbled meat off the hams of the carcass, at this season (August 3), when berries were still abundant, was astonishing.

Both black and brown bears occur in the area. The numbers of each, seen or reported, are as follows: black 21, brown 8; one of the black bears had a white V on its throat.

Five specimens were collected, as follows:

- Nisutlin River, Mile 24: 1 male adult; July 26
Sheldon Lake, Mile 222: 3 male, 1 female; Aug. 2-17

R. M. Anderson will include this material in a report he has in preparation on the black bears of Canada.

Grizzly Bear. *Ursus horribilis*

Common in all the higher country, especially above timberline; ranges regularly but less commonly into timber country probably over the whole area; comes regularly to garbage dumps. Where black bears are common there are few grizzlies, and vice versa, probably due to habitat preference.

No signs of grizzly bears were seen in the low timbered country of the Nisutlin River area, but Mr. Drury states that they are killed along Teslin River. One was reported killed above Rose River, Mile 60 (August), and one was reported seen near Mile 78 (July). Near and above timberline in Lapie-Rose Pass, Mile 90-110 (June-July) grizzly bear signs were common, and the party saw four different individuals. O. V. Figge, who hunted big game for 3 weeks in the country just south of Lapie-Rose Pass, secured three adult and four cub grizzlies, and saw another adult, all near timberline.

In the low bushy and wooded country where the Lapie Valley opens into the Pelly, U. J. Arsenault saw three different grizzlies about June 5, 6. Near Ross Post a young grizzly was shot in late August. In the extensive muskeg flat of Ross River, at Mile 177, a female grizzly and cub came to the garbage dump in early September; at Sheldon Lake occasional grizzly tracks were seen in the spruce country down to near the lake.

In Macmillan Pass grizzly bear signs were common, and reports of them at garbage dumps frequent (Mile 282-307). In the open timber of Sekwi Valley, about Mile 174 E, grizzlies were reported common, and a number regularly visited the garbage dumps; one came each of the two nights the party stopped there. In the low pass between Godlin and Twitya Rivers, a pass covered with open, spruce forest, grizzlies were reported to be common, and a photograph was seen of three that had been killed there within a few days of each other, in June.

Although grizzly and black bears favour different habitats, these overlap widely. That grizzly bears sometimes kill and eat black bears is shown by the following account from R. R. Chambers (verbal). While trapping in the Klondike area about 1940, he found where a grizzly had dug out a hibernating black bear (brown phase) and had eaten it. There were tracks and blood on the snow, and little left of the brown bear except fur and paws.

The grizzly, although coming commonly to garbage dumps, and even within the limits of occupied camps while the men were asleep, was always much shyer than the black bear under similar circumstances. It waited until later in the evening to come, and was never indifferent to the presence of humans. Usually it fled quickly when disturbed.

The Indians at Ross Post said that grizzlies sometimes kill men, and, besides several vague stories, told of one encounter with convincing details. Some winters ago a trapper, known as Old Bob, with his dog, started a grizzly from near a moose carcass. The dog began to chase it. The bear quickly turned the tables and the dog ran back behind his master. The bear knocked down the man, and ate him. This the Indians read later from the tracks in the snow.

The Indians said that most grizzlies hibernate, but occasionally one does not.

Grizzly skins have little value on the market, but their recent popularity as souvenirs has raised the price locally to \$50 a skin.

Sheldon (1911, *The Wilderness of the Upper Yukon*, p. 255) says he finds this species does not eat berries, but this is contrary to the findings of Murie (1944, *The Wolves of Mount McKinley*) and the author. Many of the droppings of grizzly bears contained berries, and the stomach contents of two animals were as follows:

- (1) Lapie River, Mile 132, June 5

90 per cent	}	green horsetail (<i>Equisetum</i>) stems,
		a handful of licorice root (<i>Hededysarum borealis</i>)
10 per cent	}	a handful of flowers of bog rosemary (<i>Andromeda</i>),
		1 meadow vole (<i>Microtus pennsylvanicus</i>)
- (2) Lapie Lake, Mile 105, July 12

15 per cent	large fleshy root of some plant
50 per cent	green stems of horsetail (<i>Equisetum</i>)
15 per cent	crowberries
20 per cent	indeterminate

Grizzlies in this area are apparently fond of ground squirrels, judging by the many excavations we saw where ground squirrels had been dug out.

Specimens were taken as follows:

- Lapie Valley, Mile 132: 1 female, skull only, June 5
 Lapie Lake, Mile 105: 1 female, July 12
 Sekwi River, Mile 174 E: 1 male, Sept. 6

These bears are obviously not the same as the grizzly bear to which the name *horribilis* applied. R. M. Anderson has a study of this group in hand, and will use the above material in it.

Alaska Pine Marten. *Martes americana actuosa* Osgood

Marten were formerly common along Nisutlin, Ross, and Macmillan Rivers at least; now they are comparatively scarce, with the best areas about Quiet Lake and Sheldon Lake. No marten or their signs were seen; our information is all second hand.

Mr. Drury of Whitehorse said that about the year 1900 marten were very common in the valleys of Pelly and Ross Rivers. One would see them in the trees, and they were so fearless they would spit at the intruder, like tree squirrels. At that time two men working together could take four to five hundred in a season, and an Indian could go out and take fifty or sixty in 2 or 3 weeks.

Keele (1910, *A Reconnaissance Across the Mackenzie Mountains, etc.*, p. 27) writes that furs are the principal articles of value derived from Pelly River and its tributaries. He gives the following estimate by R. B. Riddle, who trapped for several years on Macmillan River, as an approximation of the fur yield of Pelly and Macmillan Rivers:

Year	Number of white trappers	Kind of fur	Value
1901.....	15	Chiefly marten...	\$ 7,000
1902.....	40	Chiefly marten...	15,000
1903.....	50	Chiefly marten...	20,000
1904.....	50	Marten and lynx..	18,000
1905.....	30	Chiefly lynx.....	8,000

The Indians, he estimated, would take about an equal amount of fur.

He continues that in 1904 the lynx invaded the Pelly region, coming from the south, and disappeared about 1908, moving northward. The marten disappeared soon after the arrival of the lynx; they returned in 1907 to the parts of the region not frequented by lynx, but were reported scarce.

Sheldon, when at Sheldon Lake (1911, *The Wilderness of the Upper Yukon*, p. 274), apparently saw no marten, but noted that "the vast spruce forests yielded to former trappers abundant martens". Osgood (1909, *No. Amer. Fauna*, No. 30, p. 83), writing of the country just to the north of the Canol Road, says the Macmillan region in general is known to trappers as good marten country; at least six men worked there the season of 1904-5; good trappers might get three hundred marten in a season.

The marten, according to Mr. Drury (verbal), decreased sharply about 30 years ago; about 3 years ago they began to increase. F. Edsel of Ross Post said he used to trap martens in the Lapie Valley, where none can be found now. Last year \$50 apiece was paid to the Indians for quite a few skins; an occasional skin brought \$100.

McLennan, of Sheldon Post, said that good catches of marten have been made since his establishment at Sheldon (1939), including one Indian's catch of about one hundred skins from the Nahanni country.

The extent to which marten have decreased is perhaps best illustrated by Mr. Drury's comment that the total present-day yearly take from the area does not equal that of some single trapper's catch 35 to 40 years ago.

Northwest Fisher. *Martes pennanti columbiana* Goldman

Probably no fisher occur in the vicinity of the Canol Road.

Joe Ledue of Ross Post, who has been there since 1914, said that he had heard of only one being taken, somewhere far up the valley. Mr. Drury of Whitehorse stated that he trades a few fisher, but they do not average one a year, and he did not know of a single pelt that had undoubtedly been taken in Yukon rather than in British Columbia.

That fisher do occur in southeast Yukon, as usually assumed, is supported by trappers Leitman and Carmen of Tobally Lakes, and Larsen of Beaver River. The former have taken three in several years' trapping; the latter one fisher in several years' trapping (verbal information).

Goldman (1935, *Proc. Biol. Soc. Wash.*, 48, p. 176) described *M. p. columbiana* from Stuart Lake, B.C., on the basis of the skull being somewhat larger and more elongated.

The National Museum has no fisher specimens from Yukon, but, fortunately, Thomas Mould, who traps in the area just north of where the Alaska Highway

crosses Liard River, has just sent in four fisher skulls from that area. They probably come from within 50 miles of the eastern part of the Yukon-British Columbia boundary.

Of these four skulls, two are of old males, judging by the pronounced crests and worn teeth. Of comparable eastern specimens, there is one skull from Mistassini, Quebec, and one from Kapuskasing, Ontario.

The measurements of these specimens, with Goldman's measurements for comparison, are as follows:

Skull Measurement, M. pennanti, males

	Greatest length	Condylobasal length	Breadth of rostrum just behind roots of canines	Interorbital breadth	Zygomatic breadth	Breadth brain case across mastoid processes	Palatal length	Palatal constriction	Maxillary tooth-row (alveoli)	Crown length (outer side) of upper carnassial	Crown width of upper carnassial
Stuart Lake											
Type, male.....	131.1	120.8	24.5	26.7	79.4	58.9	65.7	11	45	12.8	7.5
Ave. 5 males.....	131.4	120.7	24.9	27.4	79.5	56.9	64.8	11	43.5	12.8	7.4
Topotypes and extremes.....	(130.5-132.1)	(118.3-121.7)	(23.8-26)	(27-28.6)	(77.8-82.5)	(55.1-59.9)	(63.8-66)	(10.4-11.8)	(42.1-45.1)	(12.4-13.7)	(7.3-7.5)
Liard River.....	133	118	24	28	.....	58.1	62	11.5	44	12.5	7.5
Liard River.....	132	118	25.5	29	.....	.....	65	12	45	13	7.5
Mistassini.....	129	114+	23	28	78	54.5	61.5	12	42.5	12.2	7.5
Kapusksing.....	125.5	114	25	31	78.2	57.8	61	12	42	13	8.1

The above measurements show that western animals average slightly larger than do eastern ones, and it may be advisable to recognize this lightly characterized race.

Least Weasel. *Mustela rixosa rixosa* Bangs

This tiny weasel was not found in 1944, but in the National Museum is a mounted specimen in winter pelage, collected by J. Keele in January 1908, at Ross Lake (now Sheldon Lake¹). This appears to be the only Yukon record.

Richardson Weasel. *Mustela erminea richardsoni* Bonaparte

According to McLennan at Sheldon Lake post, weasels are usually common in that area, but last winter (1943-44) they were scarce and he saw only two or three tracks near the post. This did not correlate with a scarcity of mice, he said, for mice were still common. The Indians at Ross Post also said weasels had been scarce the preceding winter. They were found well distributed, but scarce, only one being seen in addition to those collected. Mice were common throughout. Additional evidence as to the die-off of weasels was found in a dried-up weasel carcass in winter pelage, found under a windfall at Nisutlin River.

¹ Keele spent January 1908 on the third, then unnamed, lake of Ross River, which he later called Sheldon Lake. It has been assumed his Ross Lake is Sheldon Lake.

Specimens were taken as follows:

Nisutlin River, Mile 40: 1 male, 1 female? (skull only); July 26
 Lapie River, Mile 132: 1 male; June 22
 Mount Sheldon, Mile 222: 1 male; Aug. 16
 Macmillan River, South Fork, Mile 249: 1 (mutilated); Aug. 27
 Macmillan Pass, Mile 282: 1 male; Sept. 3

Measurements:

Male, total length 331, 321, —, 310, 281 mm.; tail 91, 88, 97, 92, 80 mm.; hind foot 47, 48, 42, 42, 42 mm.

Additional Yukon material in the National Museum, from the 1912 collection of Clement Lewis, includes twenty-six specimens from Teslin Lake and the vicinity, Nisutlin River, and Wolf River and Wolf Lake (no measurements). From the Manitoba Museum collection the author has seen specimens from Frances Post collected in 1943 by Oliver Norris-Elye.

E. Raymond Hall has identified the Clement Lewis collection; the Canol Road specimens are plainly *M.e. richardsoni*, *M.e. arcticus*, evidently not ranging as far south as Macmillan Pass.

The author is following Hall (1944, Proc. Biol. Soc. Wash., 57, pp. 35-43) in considering *M. erminea*, *cicognanii*, and *arcticus* as conspecific.

Specimens mentioned above, of which the date is recorded, collected between June 27 and September 25, including fifteen taken between September 1 and 25, are all in brown summer pelage. The specimen from Macmillan Pass, taken September 3, was still brown though an inch or two of snow covered the ground.

Western Mink. *Mustela vison energumenos* (Bangs)

Mink are fairly common along the streams by the Canol Road, where we recorded them from Nisutlin River to Macmillan River (South Fork).

Edsel at Ross Post said mink was one of the important furs traded at the post; one Indian there said he had taken ten in a winter, and some good trappers took more. Other Indians said that mink were not very common and that ten mink was a good winter's catch. McLennan at Sheldon Post said the surrounding lake country there was good mink country. Last winter (1943-44) he took five near the post.

Records made by the party were as follows:

Nisutlin River, Mile 40: tracks seen twice in the mud along the river, June 27, 28
 Sheldon Lake, Mile 222: tracks seen commonly, 2 specimens collected, Aug. 5-17
 Macmillan River, South Fork, Mile 49: tracks seen along river, Aug. 18-21

Specimens were taken as follows:

Sheldon Lake, Mile 222: 2 female adults; Aug. 12-15
 Ross Post, Mile 140: 1 skull from Indian roof

Measurements:

Female, adult, total length 485, 498 mm.; tail 155, 152 mm.; hind foot 59, 59 mm.

In addition to the above, the National Museum has five skins from Teslin Lake area (Nisutlin River, Fat Creek, and Snowden Mountain) collected by Lewis in 1912; the Museum records list a specimen from Ross Lake, January 1908, by Keele, that the author has not seen; and from the Manitoba Museum he has seen a skull collected at Frances Lake by O. Norris-Elye, October 16, 1942.

The present series of skins is very dark in colour, comparing well with *energumenos* from southwest British Columbia.

Wolverine. *Gulo luscus luscus* (Linnaeus)

No personal observations were made of this species, but, from reports, it occurs from at least Lapie-Rose Pass to Macmillan Pass, where it is fairly common, and eastward to the Mackenzie.

Mr. O. V. Figge of Davenport, Iowa, said that hunting some distance south of Lapie-Rose Pass about September 1, 1944, he shot at and missed a wolverine near timberline. The Indians at Ross Post said that there were too many wolverines, and that they occurred even down into the bottom of Pelly Valley. Their statement of its habits affecting them was "He steal like hell". They said they did not kill many, but would do so if there was a bounty on them. They spoke of several killed about 70 miles down the Pelly and of four killed about 100 miles down the Pelly last winter (1943-44).

At Sheldon Lake McLennan said they were common from there to the height of land. A few winters ago he killed one at his cache, and at another time saw the tracks of three that passed his establishment.

Several of the road construction men told of seeing wolverines above timberline in Macmillan Pass (N.W.T.) during the past winter, and Larry Dennis, in Whitehorse, in June, told of seeing one about May 1, 1944, in Macmillan Pass, and that in their survey work for the Canol project between Mackenzie River and Macmillan Pass they saw tracks commonly.

The Indians about Ross River do not prize wolverine fur.

Data (verbal) from other parts of the Yukon are as follows:

Sixtymile Creek: Robert Porsild of Whitehorse, who trapped several winters on Sixtymile, said wolverines were present there, but not especially troublesome (1930-35).

Klondike River: R. R. Chambers of Whitehorse, who trapped this area a few winters ago, had a wolverine eat the first seven marten he caught. Later that winter he caught two wolverines. The trapper on the line next to his caught seven wolverines, four of which escaped.

Tobally Lake: L. Leitman and C. Carmen of Tobally Lake say that wolverines occur and that they catch four or five each year. They cause less trouble by taking furs from traps than do wolves.

Yukon Otter. *Lutra canadensis yukonensis* Goldman

The only data on the Canol Road area were secured from McLennan of Sheldon Post who said that otter occurred sparingly in that area. The previous winter (1943-44) one trapper saw five and shot two, one of which he retrieved, on Macmillan River. McLennan has seen an otter swimming in the channel in front of the post.

McLennan also said that otter kill many beaver. One Indian, he said, when visiting his traps had found a live beaver held in a trap, being attacked by an otter. The otter fled, and the Indian took the badly injured beaver and reset the trap, which next day held the otter. The Indian brought in the badly cut beaver skin and the otter skin to substantiate his story.

No specimens were secured. In the National Museum collection is a single Yukon specimen, a skull secured at Beaver Creek, Teslin Lake, Yukon boundary, August 22, 1912, by Lewis, which R. M. Anderson has referred to this form.

In 1943 on the Alaska Highway Louis Leitman and Eric Carmen, trappers at Tobally Lake, said otter occurred in that area, but were scarce. They had occasionally seen them playing on the ice the preceding winter, 1942-43, but had caught none.

Alaska Red Fox. *Vulpes fulva alascensis* Merriam

Foxes were common generally from the valley bottom to far above timberline; tracks were seen along the road from Nisutlin River to near Camp Canol. Foxes were seen: one on Quiet Lake; an adult, two young, and a den on Rose River (Mile 90); an old fox and a den on Lapie River (Mile 132); and a single fox above the headwaters of the Carcajou (about Mile 100 E). Mr. C. O. Hage stated that in the winter of 1943-44 he saw many fox tracks about the headwaters of the Carcajou, and he saw two foxes on Gravel River. Several truck drivers spoke of seeing foxes along the road.

Mr. Drury said that fox is one of the important furs of the Pelly-Ross area, and that the 1944-45 season promised to be a good year for them. Edsel at Ross Post said fox, with mink, was the most important fur traded there. On the roofs of Indian cabins were a number of desiccated, skinned carcasses. McLennan at Sheldon Post said foxes were plentiful last winter.

Of the foxes seen: one at Quiet Lake was a cross fox, as were the two young and the adult on Rose River; one on the headwaters of the Carcajou was dark silver; and the two reported by Hage on Gravel River were dark silver.

Two occupied dens were seen: one dug in a sandy, brush-covered knoll in the valley bottom of Rose River (Mile 90), and one in a crevice in an isolated ledge of rock far above timberline above Lapie River (Mile 132).

About the Rose River den, where two pups were taken, were the remains of former meals, including remains of ground squirrels, rabbits, porcupine, whistler, and ptarmigan. Though ground squirrels appeared to be one of the main foods, at least one ground squirrel was still living in a burrow within 50 yards of the den, on July 19, where a litter was being raised. The only part of a whistler seen at the den was a fresh head, caught in a snare we set. Evidently the adult fox had been carrying it to the den, and entangled it in the snare.

About the Lapie River den were many ground squirrel tails and part of a head, and a few ptarmigan feathers.

Specimens were taken as follows:

Rose River (Mile 90): 1 male, 1 female, half grown; July 20, 21

Ross Post (Mile 140): 2 old skulls were picked up, and another sent in by H. R. Hammond

The half grown young are in the cross fox phase. One of them, the female, almost completely lacks external ears.

The old skulls compare well with Alaska specimens of *alascensis*.

Northwest Coyote. *Canis latrans incolatus* Hall

Apparently fairly common in the open country of Pelly River Valley at least.

Edsel at Ross Post said that up to about 1912 no coyotes had been taken in the country. About that time they appeared, and have increased. Their numbers fluctuate, and they are common in good rabbit years, the latest period of abundance being about 1938; since then coyotes have decreased somewhat. About 1938 Edsel took twenty-two coyotes, and about one hundred and fifty skins were traded at Ross Post that year. One winter several years ago Edsel trapped five coyotes about a moose that had broken through the ice and died in Lapie Lake. Several Ross Post Indians spoke of the recent arrival of the coyote, and of their not knowing the identity of them when they first appeared.

One specimen was secured, a skin only, taken on lower Ross River about September 1, and given to the National Museum by Mr. Arnold Buzzalini.

Timber Wolf. *Canis lupus columbianus* Goldman

Wolves were fairly common over the whole area. Tracks were seen generally from Nisutlin River to within a few miles of Camp Canol. Single animals were seen by our party as follows: Rose River, 1; Lapie River, 1; Sheldon Lake, 2; 5 miles west of Camp Canol, 1. Many road construction men told of seeing wolves, and of them coming commonly to garbage dumps.

O. V. Figge, hunting big game to the south of Lapie Pass, for several weeks about September 1, found only a few wolves.

F. Edsel of Ross Post thought wolves caused a scarcity of moose and caribou, and McLennan of Sheldon Post believed that Indians rather than wolves were the main game killers.

Mr. Drury thinks that wolves are not as important an item in causing decrease in game as is the Indians getting high-power rifles.

Two wolf dens were seen. One, above timberline, was dug into a dwarf birch covered knoll in the open Lapie-Rose Pass, and, though frequented earlier in the season, was unoccupied on June 11, perhaps due to being much frequented by road-building personnel. This site had evidently been in use for years, as there were old and new burrows, and the accumulation of animal matter had caused a rank growth of grass about them, much greener and more luxuriant than elsewhere. Bryenton found another den dug in the sandy pine-covered flat of Rose River near Mile 78.

Part of a weathered large ram skull was picked up at the first den. A freshly killed and eaten cow-moose remains, found on the shore of Rose Lake July 20, had many wolf tracks as well as grizzly bear tracks about it, and may have represented a wolf kill. As well as being told by many people of wolves frequenting the garbage dumps of the construction camp, their tracks showed that wolves commonly visited such places. On Rose River in July wolves came to feed on the freshly skinned carcass of a grizzly bear, and at Sheldon Lake in August a grey wolf came to feed on a freshly skinned black bear carcass in the garbage pit; a short time later a black wolf was seen in the same pit.

Wolves along the Canol Road have become somewhat used to persons and automobiles. They commonly come at night to within 200 yards of occupied camp. The author watched one such feeding unconcernedly in a garbage dump while a motor car drove by about 75 yards from it.

We heard no wolves howl until we were in the Macmillan River Camp (Mile 249), when one howled nearby the first evening, and the next day we heard several howling and yelping in a burn about 3 miles away across the valley.

Of nineteen wolves along the Canol Road, which we saw, or of which we have reliable colour records, ten were grey and nine were black.

Although wolf skins ordinarily do not have a high value, and Mr. Drury says that few are traded because the animals are hard to catch, the demand for the skins as souvenirs, by the personnel of the construction companies, had raised the price in Whitehorse to \$50 for untanned skins.

A number of wolf cubs had been captured and kept as pets along the road. We saw one of those at Lapie River (Mile 124) and another at Johnson Crossing (Mile 0), and they were quite tame.

Only a single specimen was secured, a skull from a rotting carcass at Lapie Lake (Mile 105), in June. The flesh measurements were about: total length, 1,650 mm.; tail 460 mm.; hind foot 290 mm. R. M. Anderson who has recently revised the Canadian forms of this species kindly identified the specimen. He¹ includes the eastern part of the Canol Road in the range of *C. l. occidentalis* Richardson.

¹ Anderson, R. M.: Jour. Mammal., 1943, p. 387.

Canada Lynx. *Lynx canadensis canadensis* Kerr

Apparently formerly common in the wooded parts of the Canol Road area in Yukon; now much reduced in numbers.

Keele (1910, A Reconnaissance Across the Mackenzie Mountains, etc., p. 27) comments on the change of abundance in lynx population in this area, implying it is due to migration, and quotes an estimate by R. B. Riddle for 1905 when thirty white trappers took about \$8,000 worth of fur, chiefly lynx, on Pelly and Macmillan Rivers, and the Indians probably took as much more. Sheldon (1911, Wilderness of Upper Yukon, p. 295) saw a lynx on Ross River. Mr. Drury said reports were that lynx were increasing in the Pelly area. F. Edsel of Ross Post also said lynx were increasing. Indians at Ross Post said there were some lynx in the area, and that years ago catches of forty lynx were sometimes made in a winter; in recent years four or five in a winter was good. One Indian had three skins, taken the previous winter. The top price Indians received in 1943-44 was \$75 a skin.

We saw no lynx, nor their signs, but picked up part of a skull on Lapie River (Mile 132), and H. R. Hammond sent a skull from Pelly River near Ross Post.

Yukon Woodchuck. *Marmota monax ochracea* Swarth

Fairly common on lower Nisutlin River (Mile 40); very scarce in the Pelly Valley about Ross Post; not heard of elsewhere.

On Nisutlin River, where fires had destroyed the forest on the steep valley banks, or where crumbling banks had not allowed forest to establish itself, were areas of willow, small aspen, shrubbery, and grass and other herbaceous vegetation. In such places woodchuck burrows were fairly common, and three half grown young were taken.

At Ross Post F. Edsel said a small red marmot as well as the grey whistler occurred, but it was rare and he had killed none. The Indians also knew it, but said it was scarce. A. Buzzalini caught one near Ross Post, July 7, and confined it in a wooden box for the party, but it escaped.

McLennan, at Sheldon Post, did not know of its occurrence in that area.

Specimens were taken as follows:

Nisutlin River (Mile 40): 3 female juveniles; July 25, 26. They measure: total length 381, 385, 389 mm.; tail 88, 95, 93 mm.; hind foot 70, 71, 72 mm. In addition, we have a Yukon specimen from Thirtymile Mountain, near Teslin Lake, that Howell 1915, No. Amer. Fauna, No. 37, pp. 34, 35) used in his review of the species. All four agree well in colour, and in skull characters.

Robson Hoary Marmot; Whistler. *Marmota caligata oxytona* Hollister

Found to be fairly common in the Rose-Lapie River mountain area (Mile 90 to 118); on Mount Sheldon (Mile 222), and about the headwaters of the south fork of Macmillan River (Itsi Mountains and Mile 268), in rocky areas above timberline.

Their favourite habitat seemed to be where outcrops of rocks provided an abundance of crevices into which they could retreat, and which were adjacent to alpine grasslands where, apparently, the same whistlers also dug burrows resembling big woodchuck holes in the meadows in which they feed.

Young were seen out of their burrows in late July.

Some of their meadow burrows had evidently been opened, in part at least, by grizzly bears, but that the bears had been successful in capturing the marmots was doubtful. I examined three such burrows and in each case they had passed between rocks a little distance below the surface, and these the bear had been

unable to move. A skull found on a high rocky ridge crest suggested that a golden eagle had fed on a whistler there; and a fresh whistler's head left in a fox snare near a fox den indicated that foxes also fed on whistlers.

Specimens were collected as follows:

Lapie Lake (Mile 105): 2; June 14
 Rose River (Mile 95): 2 skulls; July 20
 Sheldon Lake: 1 male; Aug. 14
 Macmillan River, South Fork (Mile 268): 1 male, juvenile; Aug. 28

Additional Yukon material in the National Museum includes twenty-nine specimens from the vicinity of Teslin Lake, and Wolf Lake (Lewis collection). Howell in his revision of the marmots (1915, No. Amer. Fauna, No. 37) used the specimens from the Lewis collection, referring them to *oxytona* with an approach to *caligata*, and the additional specimens are very similar. We have no specimens of *caligata* in the National Museum.

Bennett Ground Squirrel. *Citellus parryii plesius* Osgood

This ground squirrel is irregularly distributed and common over the whole area. It occurs in some of the lowlands, as well as above timberline.

The details of its occurrence along the Canol Road is as follows: above timberline in the pass 7 to 10 miles west of Johnson Crossing, common; absent from the wooded valley bottoms of Nisutlin River, Quiet Lake, and part of Rose River (Mile 20 to 80), though probably common in the mountains nearby. It is common in the open forest of upper Rose River, to far above timberline; common in the Rose-Lapie Pass, on Lapie River, Pelly River, and lower Ross River (Mile 80 to 156); apparently absent along the road itself from about Mile 160 to Mile 265, though probably present on all the mountains, as indicated by finding it on Mount Sheldon and Itsi Mountains; common on upper Macmillan River and Macmillan Pass (Mile 268 to 290). East of that point the species was recorded at many localities, the farthest east point being 45 miles east of Fort Norman (by road).

The local distribution is probably largely dependent on habitat. The high treeless country above timberline seems to be one of the optimum habitats, but the species was also very common in the valley of the Pelly and lower Lapie and Ross Rivers in the open country, along grassy banks, in aspen forest, and into the edge of spruce forest and muskeg. It seems to be an aggressive, expanding species, adaptable in habitat requirements.

At Ross Post several Indians agreed that formerly in this area ground squirrels were restricted to the mountain tops, and there were none in the valley of Pelly River about Ross Post. Following a plague of caterpillars, evidently some time after 1914, the ground squirrels appeared in the lowland and are now common.

The ground squirrel is one of the conspicuous mammals of the area, and its clicking, bird-like calls were heard commonly. Though often shy, about camps it comes to live under buildings and enters tents. Its burrows were conspicuous, as were their trails through the scanty grasses of the Pelly Valley and their black trails through the grey caribou moss (lichens) above timberline. Lengths of pipe (4 inches in diameter) left lying along the roadside were favourite retreats.

Though normally terrestrial I saw one peering out of a hollow stump about 5 feet from the ground, and Bryenton saw one several yards above the ground on a leaning stub, overlooking the surrounding shrubbery.

Mr. Edsel of Ross Post said that their flesh was superior to that of the marmot. Along lower Lapie River we saw a number of old snares, evidently set by Indians to capture these animals.

Their food seems to be largely vegetation and seeds.

The following items were found in the cheek pouches of animals collected:

Bulbils of *Polygonum viviparum*;
 Achenes of a sedge;
 Ripe achenes of *Anemone parviflora* and *A. narcissiflora*;
 Leaves of a vetch;
 Unripe fruits of buffalo berry (*Sheepherdia canadensis*);
 Leaves of Jacob's ladder (*Polemonium*);
 Capsules of *Pedicularis sudetica*;
 Capsules of *Dodecatheon frigidum*.

However, they like fresh meat. Occasional specimens were taken in meat-baited traps, and on July 17, while skinning specimens near Rose River camp, ground squirrels came about and carried off the skinned bodies of mice and small birds. A ground squirrel, shot because of its propensity for coming into the tent, was partly eaten by others of the same species.

Foxes find ground squirrels one of their favourite foods, judging by the abundant remains about two fox dens. In many places grizzly bears had dug out ground squirrel burrows. Two great horned owls taken June 28 at Lapie River each had remains of ground squirrels in their stomachs. In July, traveling above timberline, the author frequently came suddenly upon a young ground squirrel, and it was so startled that it did not know which way to flee. Such animals would be an easy prey for predators.

Young had evidently been born before mid-June, as none of the females collected between June 11 and September 9 contained embryos. The number of young in a litter was indicated by placental scars in three females from Lapie River as five, six, and ten.

Young were first seen out of their burrows on June 15, above timberline near the Lapie River camp; in the valley bottom, where the species was common and seen daily, young were not seen until June 21.

Ground squirrels were still active in Macmillan Pass after several inches of snow had fallen (September 1 to 5) and a specimen in the National Museum was taken near Teslin Lake October 3.

No melanistic examples were seen along the Canol Road, but many people said that black individuals were often seen among the normal coloured animals along the Alaska Highway near Lake Marsh, and they were occasionally seen at Whitehorse.

Specimens were taken as follows:

Yukon Territory

Rose River (Mile 95): 2 male, 1 female; July 12, 14
 Lapie Lake (Mile 105): 1 female; June 11
 Lapie River (Mile 132): 6 male adults, 2 male young, 10 female adults, 2 female young; June 13-July 3
 Mount Sheldon (Mile 222): 1 male, 2 female; August 11
 Macmillan Pass (Mile 282): 1 male, 1 female; August 30

Northwest Territories

Macmillan Pass (Mile 290): 1 male, 1 female; August 31
 Sekwi River (Mile 174 E): 1 male; September 6
 Carcajou River headwaters (Mile 90 E): 1 female; September 9
 Little Keele River (Mile 63 E): 1 male; September 7
 Dodo Creek (Mile 45 E): 1 male; September 7

Yukon Chipmunk. *Eutamias minimus caniceps* Osgood

Not abundant anywhere, but fairly common and generally distributed; recorded from Nisutlin River to headwaters of Carcajou River.

The habitat requirements of the little chipmunk are elastic, but it shuns muskeg and dense spruce forest. At Rose River (Mile 95) and Mount Sheldon (Mile 222) it was not uncommon from timberline to near the tops of the highest rocky peaks. The gravelly shores of rivers, and where the forest was open and dry, as in the Pelly Valley, were also favourite habitats.

It was largely a terrestrial animal, but twice, when animals were startled at close range in the forest edge at Lapie River, they ran 20 feet or so up spruce trees. At Nisutlin River chipmunks commonly climbed into the soapalale bushes for their fruit.

The food of these little animals was largely seeds; examination of cheek pouch contents revealed seeds only, of which the following were identified:

Seeds of raspberry (*Rubus*)
 Seeds of berry of soapalale
 Achenes of a *Carex*
 Seeds of a *Luzula* (probably *L. parviflora*)

At Nisutlin River camp the author watched a chipmunk gathering soapalale seeds. Balanced amongst the twigs at the tips of branches, it took the berries, bit out the seeds and stored them in its cheek pouches, and dropped the pulp of the berry to the ground. To check this another similarly engaged was shot. Its front paws and face were wet from berry juice, the berry seeds without pulp in the cheek pouches, and the stomach contents largely a white pasty pulp only slightly stained red from berry juice. On an open aspen hillside little heaps of the husks of grass seeds were found, possibly the work of these animals; and examination of cheek pouch contents revealed tiny, neatly hulled, unidentified seeds.

The chipmunk sometimes gave little calls that the author wrote "quit" or "wit," quite thin and bird-like, and others that may be written "hup" or "cup" that were quite low, loud, and unbird-like. The animal giving these last calls was in the branches of a fallen spruce, and lashing its long tail from side to side.

Young were evidently born before mid-June. The first young were seen running about on July 3 at Lapie River camp.

Chipmunks were still active when we left this area, the last specimen being taken September 9 on Balstead Creek (Carcajou River).

Specimens were taken as follows:

Nisutlin River (Mile 40): 2 male, 1 female, 1 sex?; July 25-28
 Lapie River (Mile 132): 6 male, 4 female; June 13-July 5
 Mount Sheldon (Mile 222): 1 female; Aug. 11
 Carcajou headwaters (Mile 112 E): 1 male; Sept. 2

Red Squirrel. *Tamiasciurus hudsonicus columbiensis* Howell

Common in the denser spruce forests of the valley bottoms from Nisutlin River to Sheldon Lake; rare or absent at timberline.

In the forest of Nisutlin River, Lapie River, and Sheldon Lake this species was common; not common in the open forest of our Rose River camp (Mile 95) nor our Macmillan camp (Mile 249); not recorded at timberline in Macmillan Pass (Mile 282).

Mr. Drury said that the Indians in this area paid little attention to trapping squirrels, leaving them mostly to squaws and children. During the past winter (1943-44) 25 to 50 cents was paid for squirrel skins. If a market continues for squirrel skins, the yield of them will undoubtedly increase considerably.

A female, taken June 10 at Lapie Lake, contained four embryos, evidently very late; no other pregnant female was taken. The first young seen running around was on July 26 at Nisutlin River camp.

Specimens were collected as follows:

Nisutlin River (Mile 40): 1 male, 2 females, 1 sex?; July 24-30
 Rose River (Mile 95): 2 males, 1 female; July 15-20
 Lapie Lake (Mile 105): 1 male; June 11
 Lapie River (Mile 132): 3 males, 8 females, 1 sex?; June 10-July 4
 Sheldon Lake (Mile 222): 2 males, 1 sex?; Aug. 7-18
 Macmillan River, South Fork: 1 male, 1 female; Aug. 24, 25

Measurements are as follows:

- Male, total length (4) 311-331 mm. (av. 319.2)
 tail (4) 111-128 (av. 117)
 hind foot (4) 52-57 (av. 53.5)
- Female, total length (9) 311-342 (av. 323.3)
 tail (9) 120-135 (av. 125.5)
 hind foot (9) 48-55 (av. 50.6)

In colour and measurements the specimens agree with Teslin Lake specimens, some of which Howell identified as *columbiensis*. Specimens from the Northwest Territories section of the Canol Road will probably be referable to *T. h. preblei* Howell.

Yukon Flying Squirrel. *Glaucomys sabrinus yukonensis* Osgood

The only area from which we have data as to the occurrence of the flying squirrel is that of Lapie River—Ross Post.

On June 6 we were told that several flying squirrels came about the Mile 127 camp at night to feed on the food put out for red squirrels, and that two had been killed and thrown into the river. On July 1 W. H. Bryenton went to this camp to collect specimens. When daylight was almost gone, about midnight, one appeared in a tree in the camp in which a red squirrel had stored many bread crusts, and was collected. About 1 a.m. another was seen and not collected. F. Edsel of Ross Post said he took four in patches of spruce timber near the post last winter, when trapping for red squirrels. Indians here say they take many of them in red squirrel traps.

Here, as elsewhere, the flying squirrels live in the tall, dense, spruce forest of the river bottoms.

The female collected July 1 measured: total length, 317 mm., tail 30 mm., hind foot 41 mm.

The author has seen another specimen, from the Manitoba Museum, taken November 9, 1942, by O. Norris-Elye, at Frances Lake.

Beaver. *Castor canadensis beluga* Taylor

Beaver occur all along the streams of the Yukon section of the Canol Road, but they are not common; much of the Mackenzie section of the Canol Road is not good beaver country.

Mr. Drury said that beaver was one of the important furs of the mixed catch coming from the general Pelly-Ross area, and the top price paid the trappers in 1943-44 was \$60 a skin. Our other records for the area are listed below.

Only a few old beaver cuttings were seen near our Nisutlin River camp (Mile 40); at our Rose Lake camp (Mile 95) was a very old beaver meadow; in Rose and Lapie Lakes were many old beaver signs, and there was at least one colony present on Lapie Lake (two animals seen by Kindle's party).

At Ross Post in June F. Edsel had about a dozen green hides recently traded from the Indians. He said that many of the beaver hunters were still out on Ross and Pelly Rivers, trying to get some meat to smoke for food for the summer before returning to the post with their beaver skins. Indians there said beaver were not common. McLennan at Sheldon Post said that this used to be beaver country, and still is, but they are scarcer now than formerly. We saw a considerable number of fresh and fairly fresh signs about the head of Sheldon Lake, but found no occupied lodges. On Macmillan River (South Fork, Mile 240), on our single visit there, we saw a number of fresh signs and two small dams, but about Mile 249, along 3 miles of river, were very few signs. At Mile 274 was a lodge near Macmillan Pass, said to be occupied, and in Macmillan Pass (N.W.T.), Mile 286, was an occupied lodge.

This country, with its many mountains and rapid streams, probably never held a great many beaver, compared with good beaver country elsewhere. It is interesting that Keele (1910, A Reconnaissance Across the Mackenzie Mountains, etc.) does not include beaver as one of the important furs of the area. Beaver are not restricted to timbered country, but also make their lodges and dams in the dwarf birch country far above timberline, as in Macmillan Pass.

No specimens were collected.

Northern Wood Mouse. *Peromyscus maniculatus borealis* Mearns

Common in the forest at low altitudes along Nisutlin and Lapie Rivers; absent near timberline and above.

About four animals per hundred trap nights were taken at the Nisutlin River (Mile 40) and Lapie River (Mile 132) camps. Extensive trapping at Rose River (Mile 95), Sheldon Lake (Mile 222), and Macmillan River (Mile 249) and Pass (Mile 282) yielded none, and McLennan at Sheldon Lake said it did not occur.

As well as being absent from the higher country, including the upper forests in the Rose-Lapie Pass, the species seemed to be absent from the extensive forests about Sheldon Lake.

A series of specimens were collected from Lapie River (Mile 132) and Nisutlin River (Mile 40) camps.

Many females were examined, June 14 to July 29; many of those taken in June were nursing, but no pregnant animals were taken. Placental scars in five females taken June 14-21 varied from 4 to 7 (average 5.4), indicating the size of the litters. Young were first trapped on July 6, when three small young were taken. The many young taken in late July varied considerably in size, but did not fall into different age groups.

It is possible that additional litters are born in the autumn, but there is no evidence of this.

Osgood Bushy-tailed Wood Rat. *Neotoma cinerea saxamans* (Osgood)

Rocky outcrops in the rather barren hillside above Lapie River (Mile 132) evidently supported a sizable population of wood rats, judging by the masses of dried twigs, stems, and droppings, and the characteristic wood rat odour. In one place, evidently in long use as a residence, out of a rock crevice oozed a black substance resembling pitch, that appeared to be from old wood rat droppings.

An adult male and an immature female were collected. Additional Yukon material in the National Museum includes four specimens from the 1912 Lewis Collection (one from Wolf Lake; one from the Liard Divide; one from Teslin Post; and one from near Teslin Lake).

Northern Lemming Mouse. *Synaptomys borealis dalli* Merriam

Not uncommon in certain areas, but apparently local in occurrence and exacting in habitat requirements.

At Lapie River camp (Mile 132) seven individuals were taken between June 17 and July 7 in twenty traps set in an open, wet moss, sedge, willow, and spruce swamp on a river flat. Meadow voles were also taken there. But intensive trapping over a wide variety of habitat elsewhere failed to yield any *Synaptomys*. At Mount Sheldon twelve were taken (August 11-15) in and about the marshy sedge fringing ponds in dwarf birch flats. At the 249 Mile Macmillan River camp seven were taken in a wet, grassy glade (August 22-25). In each case extensive trapping elsewhere than at these spots failed to yield any of the animals.

Of the twenty-six specimens taken, twenty are males and only six females. These specimens agree better in colour with *dalli* than with Wood Buffalo Park *borealis*.

At least two litters of young are produced a year, as the first small young was taken on August 5; and females were taken on August 13 and 15, each containing four embryos.

Mountain Brown Lemming. *Lemmus trimucronatus helvolus* (Richardson)

Though not found by us in 1944, there are in the National Museum specimens from the Teslin area.

Those were recently reported on by Davis, 1944, Murrelet, 25, pages 19-25. Thus, the species is to be expected above timberline on the Canol Road.

Mackenzie Phenacomys Vole. *Phenacomys intermedius mackenzii* Preble

Only three specimens were recorded: one from Lapie Lakes and two from the Lapie River camp, Mile 132.

Trap-lines of from 50 to 80 mouse-traps, set much of the time during the summer, yielded only the above three specimens. Two were taken in mixed spruce-fir forest; the other was taken on the edge of a spruce forest where it gave way suddenly to open grass.

The three specimens are tentatively referred to this form.

Crowe (1943, Bull., Amer. Mus. Nat. Hist., 80, p. 403) has shown that *mackenzii* is a race of *intermedius*.

Previously this species has not been recorded from Yukon.

Dawson Red-backed Mouse. *Clethrionomys dawsoni dawsoni* Merriam

The most common and widespread mammal; found at all our camps, and common at all but the 282 Mile camp in Macmillan Pass, where it was scarce; taken in Macmillan Pass, Mile 287, N. W. T.

The relative abundance of these voles is indicated by the following number taken per 100 trap nights at our various camps:

Nisutlin River, 8; Rose River, 3; Lapie River, 5;

Sheldon Lake, 8; South Fork, Macmillan River (Mile 249), 8;

Mile 282, 1. At Mount Sheldon as many as 19 of these voles were taken in 70 traps one night.

The red-backed voles were common in forest and bush areas, including dwarf birch, and grass habitats at and above timberline, but were scarce in marshy areas. Bryenton on July 10, on Rose River, saw a mouse running about on the lower branches of a big fir tree in the forest. The mouse was about 6 feet from the ground, and proved to be this species. They are active both day and night, as many were found in the traps in the evening.

Several broods at least are apparently raised in a season; of nine pregnant females examined between June 11 and August 18, the embryos varied in number from four to seven (average five). The first young was trapped on June 20; by late July the size groups were evident in the populations; adults, large young and small young; and some females were also carrying young. McLennan told us of finding a nest of hairless young under a piece of timber near his Sheldon Lake post about July 29, 1944.

McLennan also said this mouse was the common mouse of his area, and that during his residence at Sheldon Lake (1939-44) it had been common every year. It frequently entered his cabin and carried off food stuff, being particularly fond of rolled oats.

Two animals, found alive in traps, gave vent to short, shrill squeaks, repeated a number of times.

A large series was collected, representing all our main collecting camps.

Drummond Meadow Vole. *Microtus pennsylvanicus drummondi* (Audubon and Bachman)

The meadow vole was common in the lower valley bottoms from Nisutlin River to Macmillan River, South Fork. At higher altitudes it was replaced by the tundra mouse, *Microtus operarius*.

Macfarlane Tundra Vole. *Microtus operarius macfarlani* Merriam

Common at higher altitudes, at and above timberline, being especially common above Rose River, and in Macmillan Pass area, in both Yukon and Northwest Territories. A good series was collected.

Microtus andersoni, new species

Type. National Museum of Canada, No. 18,107; male, adult; near headwaters of Little Keele River, 82 miles west of Mackenzie River on the Canol Road, Northwest Territories, Canada; altitude 5,500 feet; September 9, 1944; W. H. Bryenton.

Diagnosis. A small *Microtus*, apparently most closely related to *miurus* and *muriei*; form robust; ears short, barely projecting above fur; fur long and dense, with guard hairs on centre of back about 15-16 mm. long; tail short, stout, about length of hind foot, densely haired, with fur on tail projecting conspicuously beyond tip; feet heavily furred, including basal half of underside of foot, and with hairs reaching from base of nails to beyond tip of nails.

Colour above, grey, slightly tinged brownish in two specimens, more pronounced in two others, with guard hairs black-tipped, giving a grizzled appearance; a small area of ochraceous fur about ear, giving a more or less indistinct spot; a faint ochraceous spot each side of nose at base of vibrissae; underparts greyish white, in two specimens distinctly washed with ochraceous; vibrissae, upper ones black, lower ones white or black, white-tipped; tail above, pale ochraceous, the black bases of the hairs showing through, especially near tip of tail, and tending toward a black sub-terminal spot.

Skull moderately heavy, and slightly ridged, broad; in lateral profile very flat, with a pronounced depression in the interorbital area; interorbital septum relatively long, rounded in cross-section of its upper edge, and bearing a low keel in the adult; zygoma strongly flaring anteriorly; rostrum relatively long and slender; bullae moderately inflated, elongate oval, and strongly converging anteriorly; palatine slits long, open, but little constricted posteriorly; incisors projecting slightly beyond tip of nasals; molar dentition light; enamel pattern as in *Microtus miurus oreas* (i.e., as in *M. longicaudus*, but with a strong tendency for there to be only two closed triangles in the third upper molar, the third triangle being open and confluent with the posterior loop in three of the four specimens).

Measurements

	Male adult	Male sub-adult	Female sub-adult	Sex?
Total length.....	139	126	113	117
Tail.....	23	20	19	18
Hind foot.....	21.5	20	19	19.5
Ear from notch (dry).....	10	10	9	11
Skull				
Basal length.....	27	24.1	23.3	23.5
Zygomatic breadth.....	16.1	13.6	12.7	12.9
Width brain case.....	11.6	11.8	10.1	11
Least interorbital breadth.....	4	4	3.9	3.5
Length of nasals.....	7.7	7.3	6.2	6.1
Rostrum, basal width.....	5	4.5	4.2	4.5

Range. Known only from the type locality, which is far above timberline.

Remarks. I have little pertinent comparative material. Through the kindness of R. M. Anderson, and H. H. T. Jackson of the U.S. Fish and Wildlife Service, Rand has twelve specimens of *M. miurus oreas*. In colour *andersoni* is very different, being grey rather than brown, but otherwise is externally similar.

The series of twelve skulls of *M. m. oreas* illustrates a striking change with age. Sub-adult skulls are smooth and light, with no interorbital keel; are very slender with elongated, laterally compressed appearance; and there is only a

shallow pre-zygomatic notch, nearly lacking in some examples. The adult skull presents a quite different picture; the brain case is more expanded; the zygoma are heavy and spreading, so that the skull appears moderately heavy and not particularly narrow; it is somewhat ridged, with an interorbital keel; and the pre-zygomatic notch is conspicuous.

Miurus was characterized by Osgood (1901, No. Amer. Fauna, No. 21, pp. 64-66) as having the third upper molar with two closed triangles. However, in the present series of *oreas* this character is variable, as it is in *andersoni*; in six of the twelve specimens of *oreas* a third loop is nearly or quite cut off from the complex terminal loop to form a third closed triangle, giving an enamel pattern very similar to that of *Microtus longicaudus*. Another dental variation in both *oreas* and *andersoni* specimens before me is that in one of each series the middle loop of the third lower molar, which is ordinarily simple, is divided into two triangles.

Of the four skulls of *andersoni*, three are sub-adult, one adult. The adult skull, compared with adult skulls of *M. miurus oreas*, differs in being proportionately wider and more bowed outward across brain case and zygomatic arch; the bullæ are slightly larger, more inflated, and more widely separated posteriorly, so that they show more convergence anteriorly; the palatine slits are open, hardly constricted posteriorly (in *oreas* they are sharply constricted posteriorly), and slightly longer, projecting farther backward than in *oreas*.

In the sub-adult skulls the same differences are apparent, but the broadness of the sub-adult skull of *andersoni* is in even greater contrast with the narrowed appearance of *oreas* than it is in the adult.

Of Nelson's *M. muriei* (1931, Jour. Mammal., 12, p. 311) there is known only the type that Rand has not seen. The skull, not having an interorbital keel, probably represents an immature animal. From the description in external characters, including colour, it appears very similar to *andersoni*. In skull characters, *muriei* is described as being very light, proportionately long and narrow; brain case and zygomatic arches flattened laterally and with nearly parallel sides; rostrum proportionately long and narrow; upper outline of skull low and strongly depressed in interorbital area; interorbital septum rather broad on top, lacking a keel; bullæ symmetrically elongate oval, their inner borders nearly parallel, not converging anteriorly, as common in the genus *Microtus*.

In the upper outline of the skull *andersoni* agrees with *muriei*, but otherwise the description of *muriei* agrees much better with the sub-adult skull of *oreas*, and *andersoni* seems to differ from the former as it does from *oreas*.

The dentition, the flattening of the skull, the depression of the interorbital area, the lengthening of the interorbital septum, with a rounded upper edge and a keel, and the flaring of the zygomatic arches anteriorly indicate that among American forms this new one is closely related to *Microtus miurus oreas* and *Microtus muriei*. Nelson (1931, Jour. Mammal., 12, pp. 310-312) refers the American forms *Microtus a. abbreviatus*, *M. a. fisheri*, and *M. innuitus* from islands in the Bering Sea, *M. m. miurus* from Mountains of the Kenai Peninsula, *M. miurus oreas* from the Alaska Range from near Mount Mackenzie to Jarvis Creek, and *M. muriei* from Endicott Mountains to the subgenus *Stenocranius*. This subgenus otherwise is Asiatic.

Ellerman (1941, The Families and Genera of Living Rodents, London), without having seen the forms to which Nelson refers, lists *abbreviatus* in the *abbreviatus* group, and *innuitus* in the *operarius* group, following Bailey (1900, No. Amer. Fauna, No. 17) with a reference to Nelson's views. He also lists *miurus* in the *abbreviatus* group, and lists *muriei* in the subgenus *Stenocranius*, but with a note that it may go in the *abbreviatus* group.

It appears that *andersoni*, *miurus*, *muriei*, and *abbreviatus* are more closely related amongst themselves than they are to any other American forms. Their relationships within the genus are yet to be worked out, and for the time at least they may best be considered as forming an "*abbreviatus*" group.

The present series of *andersoni* was taken on what the Canol Road builders called the "Plains of Abraham," a broadened ridge top between the headwaters of Little Keele River and Andy Creek, a tributary of the Carcajou. The Canol Road left the last isolated stunted spruce behind near Mile 80 west of Canol Camp, emerged from the head of McDermott Creek at about Mile 82 on to the Plains of Abraham, crossed this undulating country to the highest point, about Mile 86, altitude 5,700 feet, and then descended until at about Mile 90 timberline was reached. The face of this "plain" is undulating, to somewhat hilly, with occasional small cliffs; gravel, stones, and rocks occupy more than half the surface, small scattered herbs, grasses, and sedges occurred among the stones, and in depressions are accumulations of soil that bear dense, short vegetation. To the northward are other similar ridge tops.

It was in the scattered pockets and mounds of soil near Mile 82 that these voles were found, where the party spent the night of September 9. Two voles were taken in twelve traps set overnight, and four were dug out by hand, two of which were caught. Many fresh burrows were seen. The entrances to their burrows, frequently a few to twelve of them in an area of a few square yards, were often conspicuous because of the mounds of fresh-dug earth near them. There was sometimes a quart or more of earth in one of these flat mounds, the freshness of which indicated excavation was in active progress. Tiny trails were seen in their neighbourhood where the vegetation was dense enough to show them.

The significance of this earth became apparent when a number of burrows were dug out. Usually within a few inches of a tunnel entrance that showed a mound of earth, a cavity was exposed. These were up to 10 inches across, and half as deep. Frequently there was only an inch or two of soil and turf left covering them. It was the earth from these cavities that formed the mounds. The cavities were for food storage, which appeared to be in active progress. Most of them were partly filled with a quantity of the starchy rhizomes of the sedge, *Carex scirpoidea*; in some cavities were a couple of handfuls of the clean, closely packed rhizomes, and nothing else. Additional tunnels extended through the earth, but it was patchy and shallow, and no burrows were found more than a yard or so long, or deeper than about 8 inches below the surface. One nest, a mass of finely shredded vegetable fibre, was found in a small cavity.

In one system of burrows two voles were found that escaped into nearby rock crevices; in two other burrows one vole was found in each. Others may have escaped notice.

This country was snow covered when air photographs were made in May. There were many new snow patches about when we were there in early September, indicating an early snow cover. The voles have evidently solved the problem of existing, in an area snow covered for 8 months or more each year, by making large stores of food, as does the *Microtus operarius* elsewhere.

Northern Long-tailed Vole. *Microtus longicaudus vellerosus* Allen

This vole was not common, but was widely distributed, a small series being taken at various localities from Rose River to Macmillan Pass, Yukon.

Northwest Muskrat. *Ondatra zibethica spatulata* Osgood

Suitable muskrat habitat is scarce along the Canol Road, and where it occurs is limited in size; where marshes occur muskrats may be plentiful.

In the marshes along Nisutlin River near our Mile 40 camp, muskrat signs were fairly common and an occasional animal was seen (July 22-31). In the

Lapie-Rose Pass were many little lakes, in some of which muskrats were common, whereas in others there appeared to be none (June-July). On a marshy lake at Mile 139, near Pelly River, one muskrat was seen and a few signs noted. The Ross Post Indians say muskrats are not common locally. At Sheldon Lake McLennan said muskrats were common in places. We found the rather extensive marshes about the head of Sheldon Lake to be well stocked with muskrats, and a better muskrat area than elsewhere on the Canol Road. It would probably be possible for a trapper to take several hundred rats in a season there. We saw twelve animals one evening.

A number of muskrats were seen swimming in a pond above timberline in Macmillan Pass (Mile 290), N. W. T.

It is possible that the marshy, pond-dotted valley of Macmillan River, where it emerges from the mountains about Mile 267, carries considerable numbers of muskrats, but it was not explored.

Specimens were taken as follows:

Rose River: 3 male, 2 female; July 13-19
Sheldon Lake: 4 male, 1 female; Aug. 8-17

Mountain Jumping Mouse. *Zapus princeps saltator* Allen

Only found at our Rose River camp (Mile 95), where two specimens were taken, July 14, 16.

One was taken on a sandbar island in Rose River. The islet was thickly covered with *Epilobium*, grasses, and other herbaceous vegetation, and an open stand of willows. The other was taken in an area of willow and grass regrowth on an old burned-over area.

Alaska Porcupine. *Erethizon dorsatum myops* Merriam

Scarce to very common along the Canol Road to timberline; from Nisutlin River to Macmillan Pass. It was reported that many had frozen to death in 1942-43 in the Sheldon Lake area.

At the Nisutlin River camp signs of their feeding were fairly common, and one was seen. At Quiet Lake Mr. Kindle told me of seeing a dead one on the road. In the valley of Rose River they were very common: Kindle reported one in his camp at about Mile 70; several were seen while travelling by road in the valley; on July 5 Breitung saw seven near Mile 77; and at our camp at Mile 95 four came into camp the first night, and many were subsequently seen. At Lapie Lake, Mile 105, several people spoke of seeing them about camp, and we saw one. At our Lapie River camp signs were fairly common, and one live and one dead one were seen. Only one was seen at our Sheldon Lake camp, and there were few fresh signs. According to McLennan, they were formerly common, and he has killed them about his post, but two winters earlier (in 1942-43) when it was unusually cold, the Indians reported many froze to death, and since then they have been scarce. On the south fork of Macmillan River only a few signs were seen about our Mile 249 camp; at our Mile 282 camp many old signs were seen and one animal was collected.

In timbered country the commonest evidence of their occurrence was areas of bark chewed from spruce, pine, fir, and aspen. Near timberline clumps of fir trees 30 to 40 feet high were found from which the bark had been completely stripped and the trees killed. On upper Rose River, in the caribou lichen near timberline there were trails 4 to 5 inches wide that led into crevices in talus slopes, and evidently belonged to this species. One porcupine that the author came upon, apparently feeding on the leaves of a dwarf birch, sat quietly until he was within a few feet of it, then went lumbering off along one of those little trails. They sometimes go above timberline; one was seen in a meadow just above timberline that took cover in a scree, July 17, and another on July 11 was found in an extensive dwarf birch flat far from any trees.

Where rocks are available for shelter, they are so used, and the accumulation of droppings on the floors of such ledges may be several inches thick, as near the Mile 282 (Macmillan River) camp. Where no rock retreats are available, they climb trees to escape danger.

In the late evening of July 8, the author listened to one calling for some time. The call can be represented by the syllable "oou", low and deep, repeated a number of times, varying somewhat in intensity and sometimes ending in a plaintive or querulous note. It recalled the cooing of a giant dove, and Bryenton says porcupine calls can be mistaken for the voice of a bull moose. Watching the shrubbery from which the call came, a big black-looking porcupine was seen to waddle into a clearing in the dwarf birch and go 50 yards across to another patch of birch, pausing now and then, apparently to nibble leaves and twigs, and once to call again.

The senses of the porcupine are notoriously dull, and it is often possible to approach within a few feet of one before it moves away. But this delayed flight is not always due to unawareness. One that was come upon at about 30 feet stayed perfectly still, only slightly raising its quills, until the author walked within 3 feet of it. Then, without looking around, it suddenly galloped away.

Once one of these animals starts on a course it is often very difficult to change its line of action, but one seen on Rose River on July 9 displayed a remarkable lack of decision. Startled from our camp in the early morning, it had gone up the nearest spruce tree and spent the day there. That evening at dark it started to come down. When it reached the lowest branches, some 6 feet from the ground, the little fire by which the author was sitting quietly some 20 feet away disturbed it, and for about 45 minutes it climbed back and forth amongst the lowest limbs before venturing to descend to the ground.

The only evidence of breeding was a young one reported by Breitung on July 5, and two lactating females, unaccompanied by young, were collected on July 10. The young are evidently left unattended for long periods at this time, as these two adults were found, without young, in camp one morning; they went up nearby spruces and stayed there the day.

Porcupines can be obnoxious about camps. Kindle told of one chewing on a flour sack in his Rose River camp. At our Rose River camp we had as many as four in camp one night. They were particularly fond of the cardboard of cartons, especially that on which kerosene had been spilled. One morning the cook found two in the kitchen tent; one on the stove and one on a set of shelves. This last it upset, spilling kitchen utensils over the floor, and in its fall the porcupine struck against the side of the tent, filling it with quills. A dog was seen at Quiet Lake on June 8 that was blind in one eye, and lame, said to be the result of an encounter with a porcupine. Remains of a porcupine, evidently eaten by a predator, were reported by Porsild near our Rose River camp. A desiccated porcupine carcass, partly eaten, was found near our Lapie River (Mile 132) camp. It had been killed some time before by a prospector, Arsenault, and he said he watched the abundant ground squirrels (*Citellus*) removing bunches of fur and carrying them down into their burrows. They also, probably, ate part of the flesh. On June 13 I saw a ground squirrel with several quills sticking into its head and neck, probably from this porcupine.

Specimens were collected as follows:

- Rose River, Mile 95: 3 male, 3 female; July 9-13
- Lapie Lake, Mile 105: 1 female; July 11
- South Fork, Macmillan River; 1 female; Sept. 10

The measurements of this series, all adults, are as follows:

	Male			Female	
Total length.....	735,	860,	890	mm.;	(5) 640-750 (av. 711)
Tail vertebræ.....	190,	260,	260	mm.;	(4) 170-222 (av. 191)
Hind foot.....	95,	120,	126	mm.;	(5) 95-107 (av. 98.6)
Skull, basal length.....	99,	108,	112	mm.;	(5) 95-99.3 (av. 97.5)
Zygomatic breadth.....	73.5,	74,	74.5	mm.;	(5) 64.5-71.6 (av. 67.9)
Length of nasals.....	36,	41.3,	43.5	mm.;	(5) 35.2-39.3 (av. 36.8)

This series supports the findings of Anderson and Rand (1943, Can. Jour. Research, 21, pp. 292-309) that Yukon porcupines vary greatly in colour from mostly black animals to brownish, strikingly yellow-haired individuals. But even blackish animals are usually distinguishable from eastern porcupines by the abundant guard hairs and more yellowish colour of the bands on these hairs. The skulls are even more distinct, and show no intergradation with *dorsatum*.

These present specimens are all adult. In external characters there is a wide range of variation, most of which is represented in the six specimens from the Rose River camp.

Of the three males, one is a blackish animal with only a part of the long guard hairs with narrow rusty band at tips, underside of tail blackish; another is similar, but has more white showing in spines and a yellow underside to its tail; the third is a yellow-brown animal with much white showing in spines and with broad yellow tips on guard hairs.

The five females show similar variations; one is a blackish animal, with reduced yellow tips to guard hairs and underside of tail yellow; another skin, brownish black, has the dense guard hairs with medium yellow tips, and underside of tail black; another blackish female has much white showing in the quills, and moderately wide pale yellow bands on guard hairs; another is distinctly brown generally, with narrow to moderate yellow bands on guard hairs and under surface of tail dull brown. The last specimen is a striking blackish, yellow-haired animal, the guard hairs with wide bands of rusty yellow.

There are more blackish animals in this series than in the seventeen Yukon animals reported on by Anderson and Rand (1943, Can. Jour. Research, 21, pp. 302-4), but otherwise these support our findings.

Of the three male skulls, two are of the *myops* type illustrated in our 1943 paper; one, belonging to a very dark animal, has a skull approaching that of our illustration of *nigrescens*.

The five female skulls are less variable; all are of the *myops* type illustrated in our 1943 paper, and thus they average less ridges than do the males. The least ridged male fits into this series of females except for slightly higher crests on the posterior parts of the skull.

Pika. *Ochotoma collaris* Nelson

Common in areas of broken rocks above timberline about the headwaters of Rose, Lapie, and South Fork of Macmillan Rivers. Also recorded above the headwaters of Carcajou River (Mile 111 E) and Little Keele River (Mile 63 E) in the Northwest Territories.

Pikas were reported by Breitung as present above Miles 80-85 on Rose River (July 5); above our Rose River camp, Mile 95, they were very common, July 8-22, and prospectors who examined the mountain above Mile 113 on upper Lapie River reported pikas common there in July; Bryenton made a single all-day trip to Itsi Mountains, August 22, and found the species present, but in lesser numbers than at Mile 95. Above the South Fork of Macmillan River, at Mile 262, on August 28 the author saw droppings of these animals, and Porsild saw one; and above Mile 282 they were common, August 29 to September 11.

These little animals inhabited all the broken rock areas that offered crevices for hiding above our Rose River camp, from their lower edges where masses of boulders fallen from the peaks far above pushed out into alpine meadows where food was present in abundance, to far up towards the tops of the peaks where vegetation was scanty.

Their little bleating call, perhaps best written "eek", was often the first clue to their presence. The rounded BB shot-like droppings found under the edges of boulders are also unmistakable signs of their occurrence.

On July 10 in pika country Bryenton found little piles of fresh dwarf birch twigs, from which the leaves and tender tips had been eaten, and saw one pika carrying fresh, leafy twigs of dwarf birch.

In July the pikas were gathering and curing "hay" for their winter store of food. In a couple of quarts of "hay" from one "haystack" under the corner of a boulder A. E. Porsild identified the items. The bulk of the material was made up of young leaves of grasses and sedges with a large amount of leaves and young twigs of the willow, *Salix glacialis*; leaves of a colt's foot, *Petasites frigidus* occurred commonly. The numerous flower heads of the pussy-toes, *Antennaria monocephala* (female plants only), suggests intentional rather than chance collecting. Evidently a great many other species are taken at random, as the following list of additional plants represented by few examples in the haystack indicates:

Species	Parts represented
<i>Oxyria digyna</i>	Leaves
<i>Trisetum spicatum</i>	Panicle
<i>Festuca altaica</i>	Old sheaths
<i>Anemone parviflora</i>	Young leaves
<i>Epilobium latifolium</i>	Young shoots
<i>Dodecatheon frigidum</i>	Young leaf
<i>Veronica alpina</i>	Entire plant
<i>Sanguisorba sitchense</i>	
<i>Equisetum arvense</i>	
<i>Claytonia</i> sp.....	Flowers
<i>Salix reticulata</i>	Leaves
<i>Senecio triangularis</i>	Leaves
<i>Polygonum viviparum</i>	Plant

A young animal, nearly full grown on July 11, is the only breeding data.

Snowshoe Rabbit. *Lepus americanus macfarlanei* Merriam

Fairly common at low altitudes in willow areas where there was much herbaceous growth, on Pelly, Lapie, and Nisutlin Rivers; scarce elsewhere, and very scarce at higher altitudes near timberline.

Along Nisutlin River near our Mile 40 camp rabbits were scarce except in wet, grassy willow flats near the river, where a number were seen. However, many old signs were seen indicating previous abundance (July 22-31). At the Rose River camp (Mile 95) only one was seen, and signs were very scarce (July 8-22); at the Lapie River camp (Mile 132) rabbits were fairly common, and in a few restricted spots even very common, as about the camp where four to six might sometimes be seen in a few minutes (June 12-July 8). At Ross Post, F. Edsel said rabbits were last common in this area about 6 years earlier (1938), that they were becoming common again, and would probably die off in a year or two. The author saw Indians returning empty handed from a morning round of their rabbit snares; Indians hunting rabbits said they were fairly common, but were wild (June and July). At Sheldon Lake (Mile 222) we found rabbits scarce (August 1-20); McLennan said they had not been common during his stay in this area (since 1939); they were scarce on the South Fork of the Macmillan at Mile 249, and very scarce at Mile 282 (August 20-September 5).

Spruce, pine, and aspen felled in road construction had made available abundant bark for winter rabbit food, as could be seen by the numerous workings of the animals. In summer their food is apparently largely herbaceous. As with many other northern mammals, from mice to bears, they eat *Equisetum* (pieces found in mouths of animals shot). Little piles of leaves left on the ground where the animals have been feeding indicate that the stems of Arctic lupine and *epilobium* are eaten, but not the leaves.

Many young rabbits, one-quarter to half grown, were seen between June 14 and July 25. A lactating female that contained five small embryos, taken on June 14 on Lapie River, indicated that litters may follow each other in quick succession in this area.

Two carcasses, apparently run over by motor traffic, were seen along Ross River July 1; remains of a young one were found in a great horned owl's stomach on July 2.

In a Whitehorse shop were two rabbit-skin parkas, trimmed with rabbit tails, for sale at \$1.25 each (June 7). They were woven of twisted 1-inch strips of rabbit skin, untreated and with the fur on. The parka thus had fur on both the inner and outer surfaces. Though rabbit skin is tender, the twisting of fur and hide into a strand gives it strength, as with woollen yarn, and the result is a warm, fairly durable, but heavy garment. Robert Porsild tells me such parkas are made only at Lake Laberge, and there the Indians commonly make them for their children. The trader said that it took an Indian woman all winter to make these two garments.

At Ross Post, Edsel said that rabbits when plentiful were one of the important foods of the local Indians. In June and July some Indians were keeping rabbit snares set, which they tended in the mornings, and some of the Indian youths, accompanied by a young squaw and a pack dog, hunted rabbits with a .22 caliber rifle in the evenings, evidently combining social and economic motives.

Specimens were taken as follows: Nisutlin River (Mile 40), 2; Lapie River (Mile 132), 7; Sheldon Lake, 1; Macmillan River, 1.

Moose. *Alces americana gigas* Miller

Fairly common over the whole area from the lowest valleys up to the willows above timberline; many more reported seen along the Canol Road by truckers; an important food for the Indians at Ross Post and Sheldon Lake.

Mr. Drury said that old-timers tell of there being no moose in this part of the Yukon, evidently before 1900. They then appeared and increased, and now they seem to be decreasing. As an example of their earlier abundance, he told of seeing sixteen on a day's canoeing along Teslin River about 1920.

About our Nisutlin River camp (Mile 40) fairly fresh moose tracks indicated they were fairly common; two skulls were found in the forest; several old broken skulls and moose horns were seen about an abandoned trapper's cabin, and one moose was started at close range in dense shrubbery (July 22-31); about our Rose River camp (Mile 95) moose signs indicated a few were summering in the area, and a big bull with full-grown horns was seen on July 11 in a high valley near timberline. Lapie Pass (July 8-22) from about mile 90 to Mile 115 was known to the truckers as an especially good place to see moose, and we heard of several seen during the summer; saw a few tracks; and knew of three animals killed there.

Lapie River camp (Mile 132) tracks showed that several moose came within a few hundred yards of camp during our stay there, and a cow with a calf was seen one evening within 100 yards of camp; we were told of another cow and calf seen about 10 miles up the river, and a lone cow (June 12 to July 8). In September three Indian hunters killed sixteen moose in this area in 10 days.

F. Edsel, of Ross Post, said that moose were scarce in that area.

About Sheldon Lake (Mile 222) we found moose rather scarce and saw few tracks, but shed horns indicated their winter occurrence from the willow flats about the lake to timberline (August 1-20). Thompson told of seeing two bull moose near timberline some miles northwest of the lake the week of August 6.

In the South Fork of the Macmillan Valley, at Miles 249 and 282, only old moose signs, tracks, droppings, and shed antlers were seen (August 20 to September 5). Droppings, shed antlers, and cropped willows in valleys far above timberline in Macmillan Pass near the border indicated that moose winter there (August 20 to September 5).

Edsel, of Ross Post, where moose meat is one of the staple Indian foods, said moose were scarce there, and attributed this to the wolves, saying that many cows were without calves. McLennan of Sheldon Lake said that one year recently he had questioned the Indians as to how many moose they had killed, and found that about ten families had killed three hundred moose. Dogs as well as humans are fed on moose. He believes that the human kill, rather than the wolf kill, is keeping down the number of moose. Mr. Drury, from long experience with Indians and the country, thinks the lessened moose population is the result of Indians having high-powered rifles, and that wolves are unimportant.

A full grown female moose, recently killed and almost completely devoured by grizzly bears and wolves, was seen on the shores of Rose Lake in July—possibly an animal that had been killed by wolves.

On Lapie River we met a Ross Post Indian on September 12. He told us he was one of three men meat hunting. They had been hunting for 16 days and had killed ten moose. In later conversation with Mr. Drury, he said he thought that was a fairly good hunt.

Mr. O. V. Figge had an Indian guide who about 10 years ago was injured by a wounded bull moose that charged him in Lapie Pass. Severely injured, he still shows the results of the encounter.

The large size of moose from this area is illustrated by the 70½-inch head killed in 1922 on Teslin River, the Yukon record head; and a 61-inch head we were told was killed on Lapie-Rose Pass in 1944.

Two skulls, picked up on Rose and Lapie Rivers, are tentatively referred to this form.

Osborn's Caribou. *Rangifer arctica osborni* Allen

Fairly common in summer in the mountains above Rose River; said to migrate in winter into the upper Ross River area, and probably South Fork of Macmillan River areas in great numbers, especially in years past; undoubtedly a few occur in the Yukon part of Macmillan Pass. Pilots report "millions" of caribou in the country north of the Canol Road and west of the divide, possibly the source of winter migrants in our area.

At our Nisutlin River camp (Mile 40) we saw no signs of caribou (July 22-31), but at an abandoned trapper's cabin nearby were pieces of antlers and skin. The animals these represent might have been brought from a distance. On Rose River, at Mile 77, Bryenton found an old Indian winter camp near the river bank. There were piles of hair where hides had been cleaned; many caribou bones were scattered about; there were remains of at least eight skulls, and in one place were five antlers of female caribou. This camp was not more than 4 years old. It appeared that Indians had camped here one winter to hunt caribou nearby. On July 5 Breitung saw two female caribou above timberline near Mile 80-85. At our Rose River camp (July 8-22) many tracks were seen, indicating that caribou commonly ranged from valley bottom to near the tops

of some of the highest rocky peaks. One band of fifteen was seen above timberline near the road, and one single animal and a group of three were seen elsewhere. None of these had big horns, and only one calf was with the band of fifteen.

Prospectors in Lapie Pass said that they had found one lone caribou and a herd of twelve in the mountains immediately to the south. Mr. Figge, who spent several weeks hunting big game to the south of Lapie Pass, found few caribou in late August and early September. Arsenault told of seeing caribou tracks about 5 miles south of our Mile 132 Lapie River camp in June, but we saw none.

F. Edsel of Ross Post told us that in years past caribou used to come into the mountains about Lievre Lake (Mile 170) in March and April. Trips used to be made from Ross Post to secure a supply of caribou flesh for dog food. In good seasons seven or eight bands would be seen on Lievre Lake in a day, and these bands usually numbered six to ten individuals, rarely as many as thirty-five. In recent years, Edsel said, the caribou have become scarcer. O. Powell said that this spring (1944) considerable numbers of caribou were seen in this area.

At Sheldon Lake we found two shed caribou horns above timberline on Mount Sheldon, and F. McLennan showed us a similar set of large antlers from an animal shot near his post. He also said that while a few caribou are present during the summer, many appear, apparently from the north, in September, in small bands, and then drift down to Ross River to about Lievre Lake late in the winter. In the spring they return north by way of the Macmillan country, and do not appear about Sheldon again until the following season.

Many old, deeply worn trails, probably fall migration trails of caribou, were seen in the valley of the South Fork of Macmillan River at our Mile 249 and 282 camp, indicating that caribou in years past had travelled through in considerable numbers. Tracks made during the summer indicated that a few caribou summer in this area, but none was seen.

Caribou were evidently fairly common in the Upper Rose River area. On some mountains about the Lapie-Rose Pass prospectors told of finding both caribou and sheep on the same mountains; but there seems to be a certain amount of segregation of these species. About our Rose River camp (Mile 95) we found only caribou. Not only were they on herbaceous and grass-grown flats and slopes, but their tracks showed that they commonly crossed the high rocky ridges and passed within 100 yards of one of the highest peaks. Of the nineteen animals seen here in August, not one was a large bull, and only one was a calf. The animals were moulting; some still wore the pale, faded, tan-coloured old pelage; others had more or less shed this fur, and showed fresh, dark, slate-coloured pelage.

One specimen, taken on Rose River, is tentatively referred to this form.

Dall Sheep. *Ovis dalli dalli* Nelson

A saddle-back sheep, intermediate between Dall and Stone sheep, was fairly common in the Rose-Lapie River area, and about upper Ross River. Sheep, possibly this form, were reported from Itsi Mountains. The pure white form of Dall sheep was common on the mountains above Sekwi River and Dodo Creek, at least, in the Northwest Territories.

We saw no sheep on the mountains about our Rose River camp (Mile 95), where caribou were fairly common. However, prospectors said that in the mountains each side of the Rose-Lapie Pass, and down the Lapie (from Mile 98 to Mile 132) sheep were common. O. V. Figge, who had hunted south of Rose-Lapie Pass for 3 weeks about September 1, found few sheep, seeing only about a dozen rams. We saw an old ram's skull at a wolf den in Lapie-Rose Pass. Near our Lapie River camp we saw remains of five dead sheep and abundant

sheep signs on the mountains. Many Highway personnel told of seeing sheep here. On September 12 one of a party of three meat-hunting Indians, camped near Fox Creek (Mile 120) on the Lapie, said they had killed two sheep as well as ten moose in 16 days. From all accounts, these are mostly "saddle-back" sheep.

On Mount Sheldon Porsild saw a few old sheep signs, and McLennan said sheep had been reported there the previous winter. Goats, reported from Itsi Mountains, probably refer to sheep. About the headwaters of Macmillan River, Mile 268, were a few old sheep signs. In our limited mountain work about our Macmillan Pass camp no sheep signs were seen.

Rufus Garrow, of the Canol Road personnel, said that on the mountains above Sekwi River white sheep were very common, and with binoculars he had counted about fifty of them at one time. While camped one night on the Sekwi, at Mile 174 E, we were told by many people of the abundance of sheep, and the next morning (September 6) saw a band of six.

In the dry broken hills about Dodo Canyon sheep are evidently very common. One of the Canol Road personnel at the pump station (Mile 35 E) said that there were probably 200 sheep within 4 miles of the station and he had seen 100 in a day's tramp.

The accounts of the Rose-Lapie sheep agreed that these were mostly pale saddle-backed in coloration, and the sheep skins we saw checked with this. Sheldon found the same coloration in the sheep of Mount Sheldon. The Sekwi and Dodo Canyon sheep were said to be all white, and the six we saw appeared to be pure white.

Young rams and ewes were commonly mistaken for goats by Canol Road personnel, and we were shown a photograph of a band of ewes taken at Dodo Canyon that were thought to be goats.

Two skulls were obtained as specimens from Lapie River.

